

# THE IRON AGE

A Review of the Hardware, Iron, Metal Trades.

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Reading Matter Contents.....page 982  
 Alphabetical Index to Advertisers " 173  
 Classified List of Advertisers.... " 165  
 Advertising and Subscription Rates " 172



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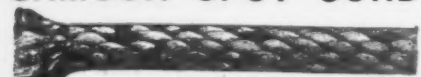


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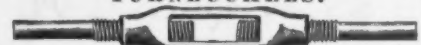
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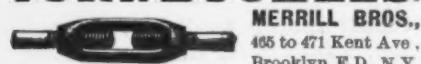
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# THE IRON AGE

New York, Thursday, October 12, 1905.

## The Henry R. Worthington Hydraulic Works.

### Description of the Immense New Plant at Harrison, N. J.

Though occupied some months ago, the great plant of the Henry R. Worthington branch of the International Steam Pump Company at Harrison, N. J., has only recently been fully completed and its operations thoroughly systematized. Even yet there is considerable machinery to be installed to bring the shops up to their possibilities in output, and the process of rounding out the equipment and unifying the various departments so as to secure the largest efficiency is one that will yet require time.

Unique in size among industrial plants in the vicinity

pressure. The duty guaranteed is unusual also, being 175,000,000 foot-pounds per 1000 pounds of steam. Both engines are 27 and 42 and 76 x 45 x 60 inches. They will be supplied with surface condensers in the suction pipes and attached air pumps. One of the engines goes into the Central Park Avenue Station and the other into the Springfield Avenue Station.

When it is stated that the range of work at this new plant is from such heavy castings as the above engines require all the way down to castings of the size of a



Fig. 1.—Machine Shop of the New Henry R. Worthington Hydraulic Works, 1006 x 122½ Feet.

of New York, and equaled in floor space by few in the country, these works are of special interest also for the way in which important problems of construction and equipment are handled by the designers. These shops take care of the work formerly done by the Henry R. Worthington plants at Brooklyn, N. Y., and Elizabethport, N. J., which had for some time been overcrowded. The capacity of the Harrison plant is several times greater, however, and makes possible the handling of the large volume of business taken by the company the past year. Conspicuous among the work now going through the new plant is that for the important Chicago contract, taken last December, for two Worthington vertical triple expansion high duty pumping engines. These engines are to deliver 40,000,000 gallons per 24 hours against 125 feet normal head when supplied with steam at 140 pounds

half-dollar, and that the metal entering into them embraces a range from cast iron to the noncorrosive and bearing metals, it can be appreciated that an unusual scale of operations and range of equipment are represented in the various departments of these works.

#### Twenty-Eight Acres of Floor Space.

For the plant at Harrison a 34-acre tract was secured just back of the bottom lands on the banks of the Hackensack River, the site rising well above the meadows. There are 28 acres of floor space, and when running full the works will employ 6000 men. The buildings, which are shown in the plan view in Fig. 2, are in two groups. The northern group consists of the machine shop, high and low erecting shops, testing departments, blacksmith shop and power house and shipping and warehouse buildings. The foundries, pattern warehouse, pattern shop,

offices and auxiliary buildings form the southern group. As the plan shows, railroad tracks extend to every department of the vast plant. The Lackawanna and Pennsylvania railroads afford shipping facilities, and spurs from the railway tracks permit the raw material to be delivered directly to the point where used and the machinery to be loaded on cars and prepared for shipment in the shops in which it is finished. Tracks from the two systems named above adjoin the buildings on three sides and enter in six places.

The design of the plant, which was the product of much thought and investigation, contemplates the direct progress of material from the foundry end on the shortest lines through the succeeding departments and its delivery on cars in the finished form with the least handling. The products include steam, electric and power pumps, a new type of centrifugal pumps, condensers, cooling towers, water meters and the other hydraulic and steam appliances with which the Worthington name

ple window space in the bays, both above and below and the skylights and clerestory windows of the center bay, give unusually good light in all parts of the shop. The clerestory windows also serve as ventilators. For night work arc lamps are provided in the machine shop as well as in other parts of the works. The center bay of the machine shop is spanned by five Niles traveling cranes, one of 30, two of 20 and two of 15 tons capacity. In each of the side bays are 12 5-ton cranes, which travel their full length. For the transfer of work from the floor to the gallery there are five hydraulic plunger elevators of 5 tons capacity. Over 100 electric jib cranes are provided for handling work on and off the machines. The unusually elaborate crane and elevator system permits of speedy progress of work from the time of entering the shop until its transfer to the low or high erecting shop, and very satisfactory results have been obtained in the rapid placing of work on the machines. Three tracks enter the machine shop, one from the erecting shop and two from

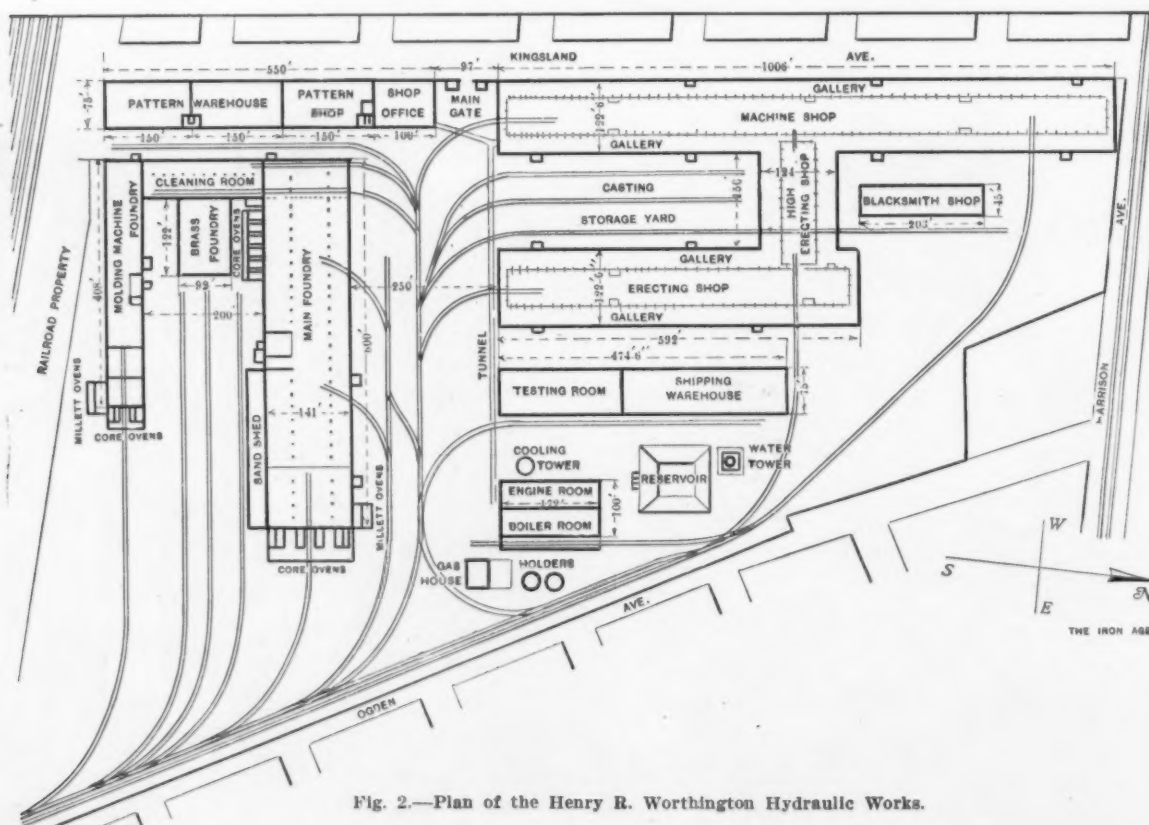


Fig. 2.—Plan of the Henry R. Worthington Hydraulic Works.

has long been connected. In addition to the railroad tracks mentioned there is a complete system of industrial railway tracks connecting all buildings, some of these being permanently located and others arranged to be shifted as the work requires.

#### The Machine Shop.

First in point of interest is the machine shop, which occupies the northwestern portion of the tract. An interior view is given in Fig. 1. It has the unusual length of 1006 feet and is 122 feet 6 inches wide. The floor area of the entire plant is approximately 28 acres. The machine shop and all other large buildings are built of steel and brick. Fire protection is afforded by a Grinnell sprinkler system, with one sprinkler for every 20 square feet of roof, and there is a works fire department, to which reference is made further on. In the number, capacity and variety of its tools and in the employment of the most modern development of shop practice the machine shop is one of the most conspicuous in the world. It is high and well lighted. The distance from the floor to the top of the crane rails is 30 feet and to the peak of the roof 50 feet. There is a center bay 61½ feet wide and two side bays, each 30½ feet wide. The side bays are each two stories high, the second story forming a gallery running the entire length of the shop. The am-

the yard, the latter at the end and the side of the shop, respectively.

The extent to which individual motor drive is employed on the main floor is noteworthy. The overhead space in the main bay is entirely free from shafting and belts. Group drives are found in the galleries where the lighter operations are performed and where automatic machinery is employed largely. About 300 tools on the main floor have individual motors. These machines, some of them re-equipped from the old works, but most of them new, are arranged on the sides of the shop next to the crane columns.

After careful investigation of the various variable speed systems the engineers decided to employ the field control method of the General Electric Company, with some few exceptions, where instead of controllers rheocrats were used. The amount of electrical variation was gauged by the requirements of the individual tools. Machines requiring a small variation were equipped for a variation within that limit, and those requiring, say, 200 to 300 per cent. variation were equipped with motors giving that variation. On the very large tools on the main floor the motors in most cases have a field control of 2 to 1. The manner in which the range of speed changes was increased, all these changes being made with the tool still in motion, may be illustrated

in the case of a lathe. The countershaft drive ordinarily provided by the builders of this lathe gave from 17 to 372 revolutions of the spindle per minute. Driving the lathe by a constant speed motor provided with a rheocrat gives a speed range from 9 to 820 revolutions per minute, with 150 changes, of which only six were originally provided through the gearing in the head. All the others are controlled by the workman without leaving his position.

The most conspicuous tool on the main floor is a

der work. Conspicuous among planers on this floor is one 96 x 96 inch x 24 feet. In Fig. 4 are shown several of the important tools on the main floor of the machine shop.

The west gallery of the machine shop is given up to meter work, the original plunger type of Worthington design being still made in large quantities. In the later, or disk, type, now largely used for domestic metering, the disks are of hard rubber, the turning of which is carried on side by side with the operations on the metal parts.

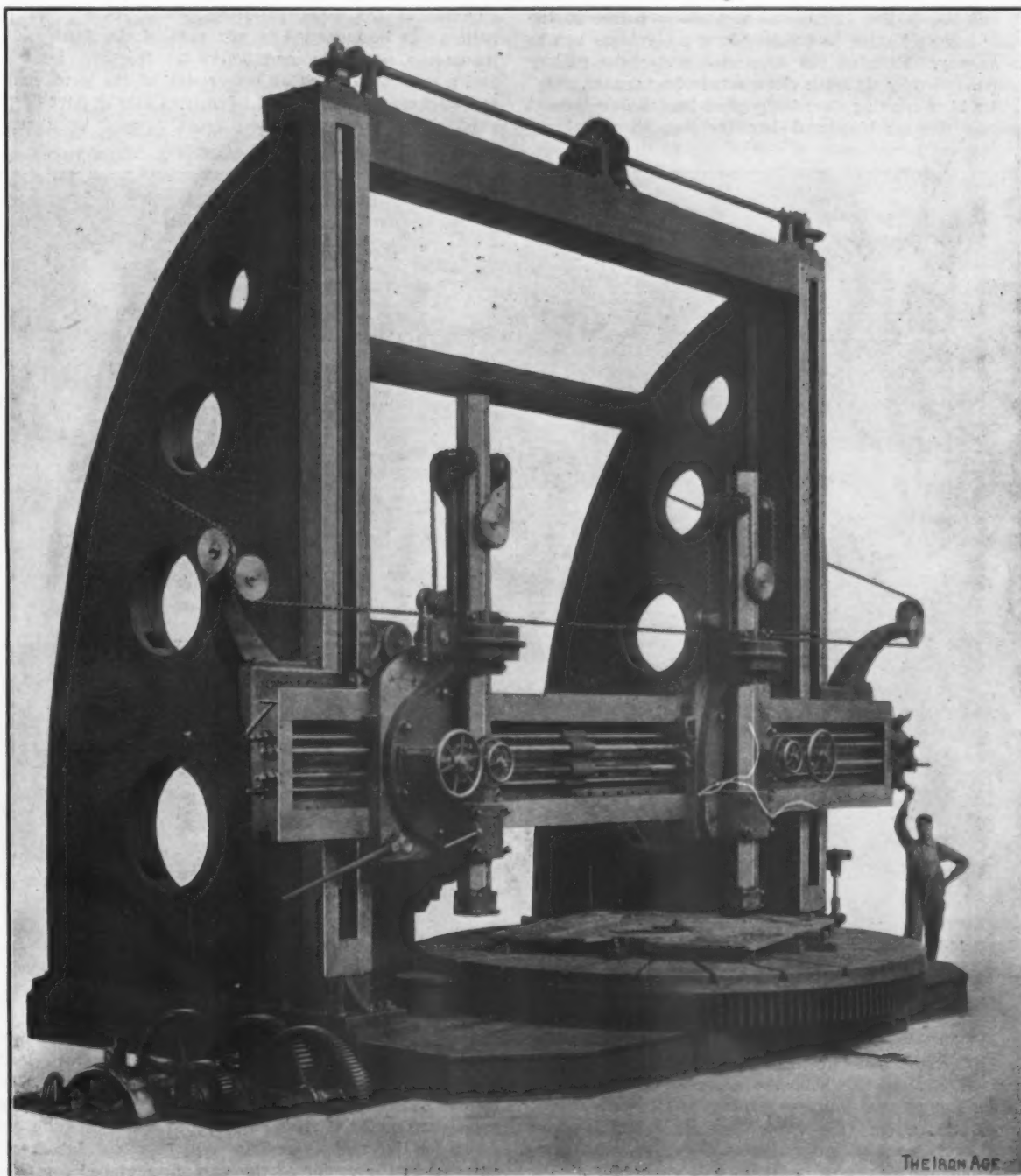


Fig. 3.—The Largest Tool in the Machine Shop, a Boring and Turning Mill with 20-Foot Swing.

Niles boring and turning mill with a swing of 20 feet and an extreme height under tools of 15 feet. This tool has been employed on centrifugal pump work. In turning operations the machinist is stationed inside the huge casting as it revolves with the table, directing by signal his assistant, who stands at the controller some distance away. As exhibited at the St. Louis World's Fair this machine was equipped with rear tool column and central boring bar, the whole weighing nearly 200 tons. It is shown in Fig. 3. Another noteworthy machine is a large combination vertical and horizontal boring, drilling and milling machine employed on large Corliss steam cylin-

The east gallery of the machine shop is equipped with smaller tools, many of them engaged in the automatic production of various small parts.

#### Erecting and Testing Buildings.

The erecting shop, Fig. 5, is of the same width as the machine shop, 122½ feet, and is 592 feet long. Here the assembling and erecting of a wide range of pumps are carried on and in this building the centrifugal and electrically driven pumps are tested, a large tank being located under the floor. As soon as a pump is finished it is tested at the maximum duty and under conditions



similar to those in actual service. The building containing the ordinary steam pump testing and the shipping departments is 474½ feet long and 75 feet wide.

The testing portion of this building is equipped with two 7½-ton cranes, while for smaller work there are four 5-ton cranes. In the shipping department are four 7½-ton cranes.

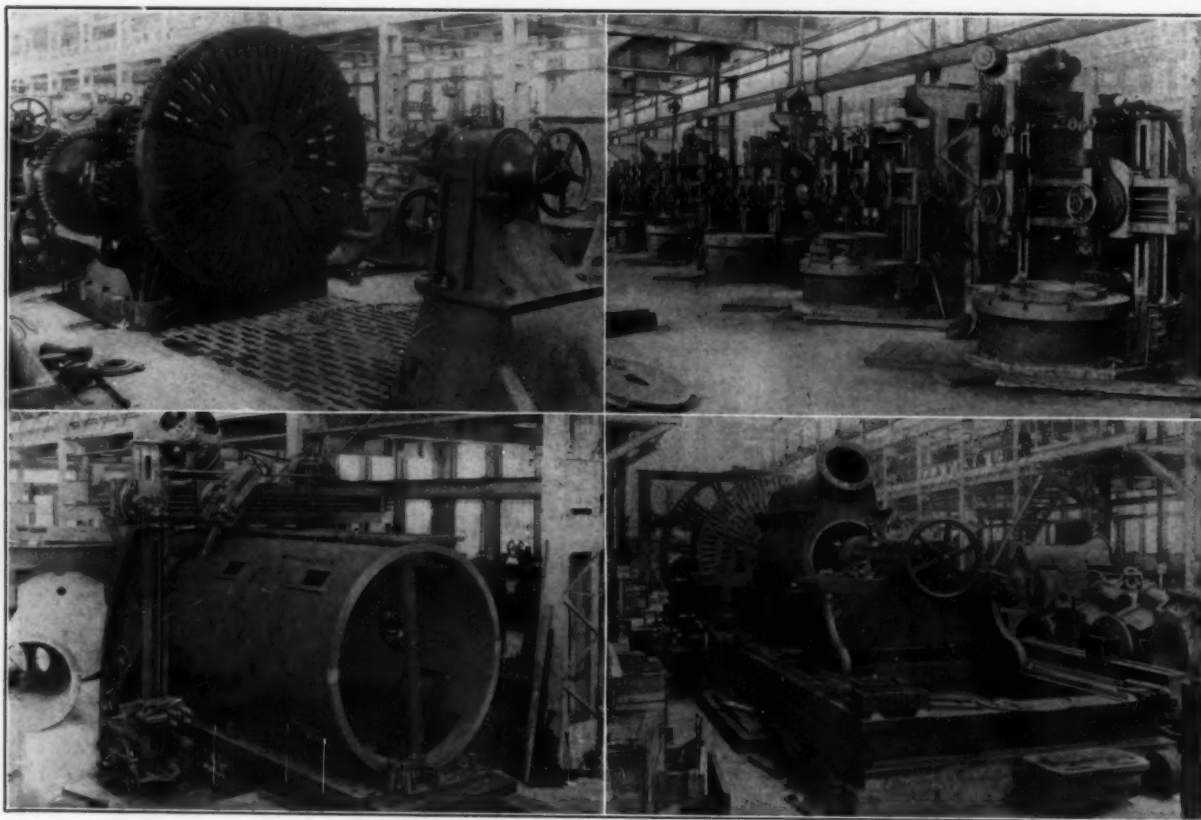
The low erecting shop has two galleries. That on the west side is the storeroom, in which finished stock is kept. The east gallery is occupied by the repairing and electrical departments. There are one 10-ton, two 15-ton and one 20-ton cranes in the center bay and three hydraulic plunger elevators run to the gallery. Each of the side bays under the gallery is commanded by six 5-ton electric traveling cranes.

The high erecting shop is 200 feet long and is located between the machine and low erecting shops. It is

testing room. In the south end of the erecting shop is the receiving department for all supplies, a standard gauge track entering this end of the building.

#### The Main Foundry.

In the erection of the foundry special attention was given to provisions for the handling of raw materials to the best advantage. The yard shown in Fig. 7, provided for the storage of pig iron, fuel and other material, is located between the main foundry and the molding machine foundry and is 400 x 200 feet. Three tracks parallel to the main buildings permit cars from the railroad to be unloaded in any part of the yard. The transverse narrow gauge tracks at frequent intervals and a depressed track on either side of the yard enable the workmen to load small hand cars in any part of the yard, shove the car on to a track carried by a truck



100-Inch Lathe, Driven by 15 Horse-Power Motor.  
14-Foot Planer with 30 Horse-Power Motor.

A Group of Boring Mills.  
120-Inch Double Head Lathe with 15 Horse-Power Motor.

Fig. 4.—Some of the Noteworthy Tools, with Motors.

spanned by Sellers cranes of 30 tons capacity, the distance from the floor to the bottom of the crane hook being 62 feet. In this shop the great vertical triple expansion pumps for municipal water work stations are erected and tested. There are three galleries, those on one side being, in order from the floor, toolroom, brassroom and brass polishing and storage room. On the opposite side the first gallery is given up to shop work, the second to storage and the third to grinding and polishing operations. There are two Otis electric elevators, which facilitate the conveyance of material and tools to and from the different galleries. The center bay of the high erecting shop is lighted by 14 arc lamps fitted with reflectors. Each gallery has 12 of these lamps provided with concentric light diffusers. A section of the high erecting shop is given in Fig. 6.

All centrifugal pumps and condensers go to the high erecting shop, thence through the portion of the low erecting shop set apart for testing them to the shipping building. The very large pumps go direct from the high erecting shop to the shipping department. All pumps apart from those mentioned above go from the machine shop to the erecting shop, thence directly across to the

traversing either of the two depressed tracks and convey it to any other transverse track or to the track leading to one of the hydraulic elevators by which the cupola charging platform is reached. Fig. 7 shows in the middle ground the track leading to the hydraulic elevator in the main foundry. A chemical laboratory situated in the center of the yard is equipped for thorough tests. Fuel and iron are bought by analysis and all metal not up to a rigid standard is rejected.

The main foundry, Figs. 8 and 9, is 600 x 400 feet and is equipped to handle all large and special work. It contains three loam pits, 15 x 30 feet and 15 feet deep, in which the large cylinders and condenser shells are cast. Its coreroms turn out cores of all shapes and sizes and weighing from 1 ounce to 1000 pounds each. Four electrically operated Niles 30-ton traveling cranes and five 15-ton jib cranes located in the center bay, which is 60 feet wide, convey large castings and cores to all parts of the building. The side bays, each 40 feet wide, contain four 5-ton electric traveling cranes to handle flasks, patterns and castings. The main foundry cupolas are two in number, having 84 inches shell diameter and 72 inches diameter inside of lining. Their capacity is

36 tons an hour. The two rotary blowers are driven by 75 horse-power electric motors.

Adjacent to the green sand foundry is a shed 45 feet wide, 25 feet high and 200 feet long, divided into bins, which are used for sand storage. Sand is delivered to the plant from drop bottom flat cars into a pit. A bucket elevator conveyor carries it to a belt conveyor system of 40 tons per hour capacity which extends over the entire length of the sand shed and is arranged to dump the sand in any particular bin. In the center of the sand shed are located the mechanical sand mixers, which are of the revolving cone type, for mixing core sand and facings. Small cars and a narrow gauge railway system built for the purpose then deliver the sand to the core makers and molders in various parts of the shop.

A portion of the main foundry, 75 x 140 feet, is provided with grated openings 3 x 5 feet, through which the sand drops as castings are taken from the flasks.

sand, which can readily be taken and mixed with the sand of each heat as it falls through the grate above. Each floor is provided with an independent bucket conveyor, which brings the newly prepared loam back to each molder and deposits it through troughs back on to the molder's bench. Fig. 11 shows the cellar and the bucket conveyors. By this arrangement each man uses his own sand over from day to day, or each floor may use a different kind of sand. Moreover, should one conveyor get out of order it does not tie up the remaining part of the shop, as is likely to be the case in a long conveyor system. Over each molder's floor is a small 1-ton traveling crane operated by air and electricity and having a runway across the width of this building, 60 feet.

A space of 100 feet at one end of the building is used as a coreroom, in which the cores for this foundry and the brass work are made.

The melting equipment consists of two 80-inch cupolas located at the center to one side of the building,



Fig. 5.—View in the Low Erecting Shop, Used in Part for Testing Smaller Pumps Before Testing Building was Completed.

In the basement, immediately underneath, the sand is taken by belt conveyor to an electric separator. From the latter the shot iron goes to an elevator and is finally delivered on the cupola platform. The sand is delivered to a car on an outside track and returned to the foundry.

The ordinary small cores used in the green sand work are made in a special coreroom, in which 30 women are employed for this purpose exclusively. The larger work is handled by men. The core ovens are fired with gas or coke. There are six Millett core ovens and eight 10 x 25 foot and six 15 x 30 foot ovens.

#### Molding Machine Foundry.

The molding machine foundry is 65 feet wide by 400 feet long. It is amply lighted by skylights and side windows. The molding equipment consists of machines, the floors for each being 12 x 30 feet. Each floor contains a bench for loam, a machine, a space 12 x 20 feet for flasks, and a grating, over which all flasks are dumped after pouring, allowing the sand to fall through into the cellar. This cellar has concrete floor and underlies the whole building. At one end are piles of new

having a capacity of 30 tons per hour. The blast is furnished by electrically operated cycloidal blowers. Hand cars containing iron and fuel for the cupolas are lifted to the charging platform by a hydraulic elevator and the contents thrown direct from the car into the cupolas, which are arranged to operate alternately from 8 a.m. to 5 p.m. Molten metal is drawn into large tilting kettles mounted on trucks, which may be quickly delivered to any point by means of the double track system which runs through the center of the building in both directions from the cupolas. Pouring is done by small hand ladles. The division of labor is such that the molder is left free to mold all day long. The cores are made by women and delivered to the molders by boys. As fast as the molds are made, one gang, which is assigned to this work, pours with hand ladles and is followed by the dumpers, who do nothing else. The castings which are thus left on the grates in the middle of each floor are loaded on a truck and delivered to the chipping and cleaning room, which adjoins one end of the building. The system gives as near continuous molding as could be provided and does not necessitate

an expensive conveyor outfit—expensive both in first cost and repairs. The arrangement makes possible the turning out of four or five times as many castings as

are of 500 pounds capacity per hour and three of 4000 pounds capacity per hour. All the small brass work is made on molding machines and the cores are made by

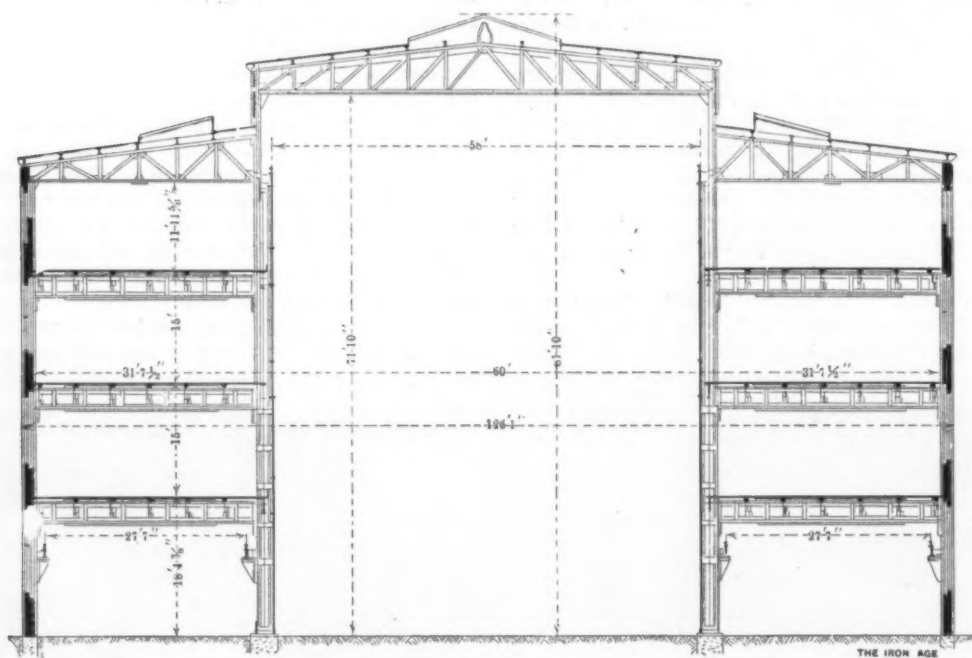


Fig. 6.—Section Through High Erecting Shop.

could be produced on the same floor space under ordinary foundry methods.

#### Brass Foundry.

The brass foundry (Fig. 12), 110 x 200 feet, is situated between the main foundry and the molding machine foundry. The center bay contains a 2-ton traveling crane operated by compressed air and has a

women. Brass castings up to 5 tons are produced, the heavier work being done in the main foundry, to which molten metal is taken from the brass melting furnaces.

#### Cleaning Room.

The chipping and cleaning room, 60 x 200 feet, is conveniently reached from all the foundries by flat car

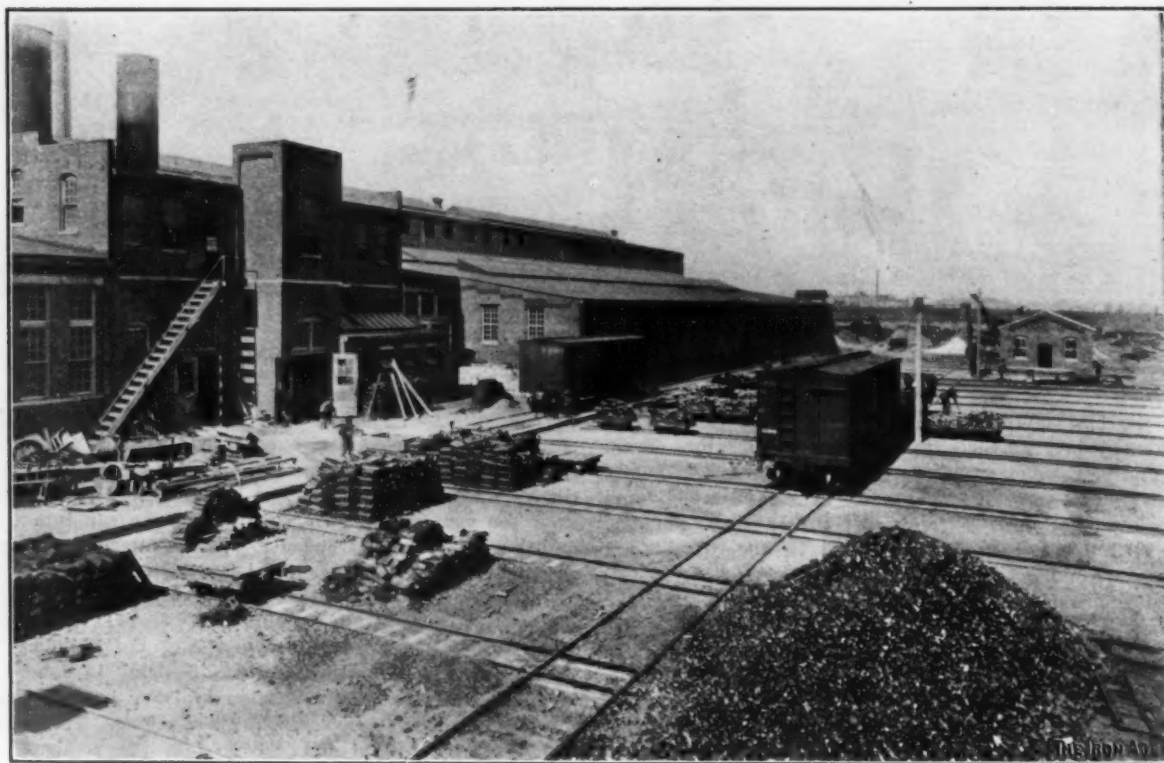


Fig. 7.—Foundry Yard. Thirty-Inch Gauge Tracks Transverse to Standard Gauge Tracks. Depressed Track at the Side.

runway the length of the building. The two side bays are equipped with hoists of the trolley system capable of handling 1000 pounds each. For the brass melting five Schwartz furnaces are employed, each furnace having its own blower and motor. Two of these furnaces

and hand car tracks, which afford economical transportation. All of the small castings are delivered here to receive the final touches before entering the machine shops. The castings are taken from the hand and flat cars by a 5-ton electric crane having a travel of 200 feet



on a 45-foot runway. A 1-ton pneumatic hand power hoist also serves to carry large castings to the 48 x 72 tumbling barrels, which are operated by a 75 horse-power motor. Double carborundum 20-inch grinders operated by 75 horse-power motors and hand and pneumatic chippers are employed to dress off the rough edges. Numerous connections for pneumatic pressure are distributed throughout. The most modern methods, including a sand blast system, are used to remove the rough faces

#### Pattern Shop and Pattern Storage.

Bounding the southern group of buildings on the west is the four-story building containing pattern shop, pattern storage and the offices. It is 550 feet by 75 feet. Over the portion occupied by the offices the roof for a length of 100 feet is of saw-tooth construction, the drafting department occupying the top floor. The offices are equipped with fire proof vaults and have various other

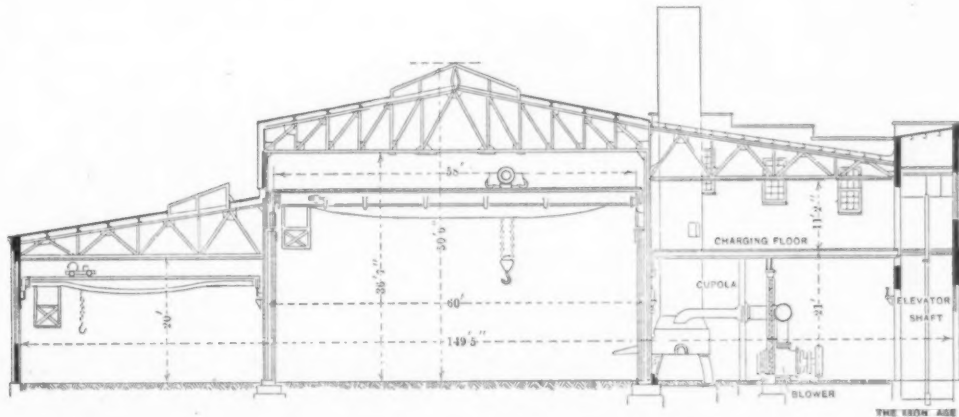


Fig. 8.—Section Through Main Foundry and Bays.

and objectionable scale from the small castings. The latter are taken from the rattlers to the sand blast, after which they may be given a very heavy first cut in the machine shop. The quartz sand fused into the scale is converted into dust by the rattlers and makes good parting sand. Castings are shipped and delivered into cars and taken direct to the machine shops. Two annealing furnaces of 12 tons capacity each have recently been built in connection with the foundry department.

A further chipping and cleaning room 100 feet long

features of latter day office construction. On the third floor of the office portion of the building are a restaurant for office employees, a lecture room and private reception rooms.

The wood pattern department takes up a 150-foot section of the building, having three floors each 75x150 feet. On the first floor is machinery for rough wood work, including flask making. In the pattern shop proper, on the second and third floors, the equipment is of the latest design. The pattern storage warehouse occu-

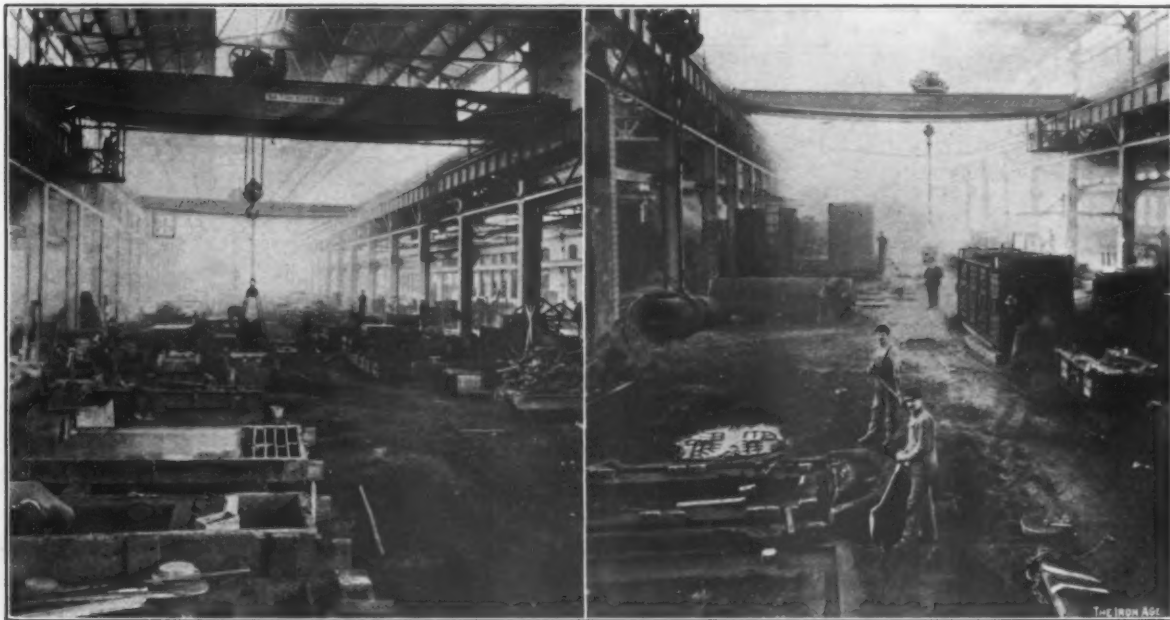


Fig. 9.—Views in the Main Foundry.

is provided at the end of the main foundry. It is equipped with compressed air connections for pneumatic chippers, sand blasts, &c., and a system of grates through which all dirt from the castings falls into a cellar, leaving a clean floor for the cleaners and chippers to work over. This cellar extends underneath this part of the foundry. All castings are taken from the molds and deposited on the floor of these rooms, so that all this dirt goes into the cellar. It is then taken to a bucket elevator conveyor, which deposits it into freight cars on the track just outside the building.

ples four stories and on each floor are several fire walls, with self closing fire doors held by fusible metal fastenings. Large patterns are stored upon the floor. Sweeps and patterns for loam work parts are kept in racks. Smaller patterns are stored on wooden shelves supported on iron brackets, the latter secured to cast iron columns. Stripping plates and patterns for molding machines are kept in a separate ground floor room opposite the molding machine foundry. Metal patterns used in connection with molding machines are made in the machine shop, a space 40 x 60 feet being given to this work.

**Power House.**

The power plant is located in a building 100 x 172 feet about equally divided between boiler and engine rooms.

for the furnaces is stored in bins along the side of the boiler house, these bins being built of concrete, with the bottom about 4 feet below the boiler room floor. They are



Fig. 10.—Interior of Molding Machine Foundry, Showing Air Hoists and Sand Elevators and Troughs.



Fig. 11.—Cellar of Molding Machine Foundry with Sand Elevator System.

There are nine Babcock & Wilcox boilers of 330 horsepower each, hand fired. The chimney for the boiler furnaces is 200 feet high and 9 feet internal diameter. Coal

filled with coal up to the boiler room floor level, where a temporary floor is formed with tar and fine coal. Above, the bins will be filled with coal for regular use,

but the supply below will be reserved indefinitely for emergencies. The coal cars are pushed up an inclined track and dumped directly into the top of the coal bins or through chutes to the boiler room. Power is furnished by two 750 horse-power horizontal cross compound Rice & Sargent engines of the Corliss type, furnished by the Providence Engineering Works. They have steam actuated valve gear, which secures quick action. The engines exhaust into a Worthington self cooling central condensing plant of the surface condenser type connected with a cooling tower. The latter is of interest from the fact that it can be operated with natural or forced draft. In hot humid weather the tower is flooded and sealed and fan blowers driven by an independent engine of 75 horse-power are brought into requisition. The tower is designed to take care of a 2500 horse-power plant. Each engine is direct connected to a 500-kw. three-wire generator running at 150 revolutions per

to the condenser plant is a Worthington twin beam air pump. The feed water heater is of the Worthington multicurrent type.

#### Fire Protection and Other Features.

Water for drinking purposes as well as for fire protection and other uses is obtained from four 8-inch driven wells 350 to 500 feet deep, with a tested capacity of 1350 gallons per minute. Compressed air is employed to raise water from the wells and deliver it to a reservoir with a capacity of 1,000,000 gallons. However, drinking water and water for the lavatories is pumped direct to insure coolness. Fire hydrants are placed at frequent intervals throughout the yards, while hose reels are distributed throughout the shops. The automatic sprinkler service is supplied from a 100,000-gallon tank on a tower 150 feet high.

In addition to that afforded by the complete sprinkler system fire protection is secured through a works fire

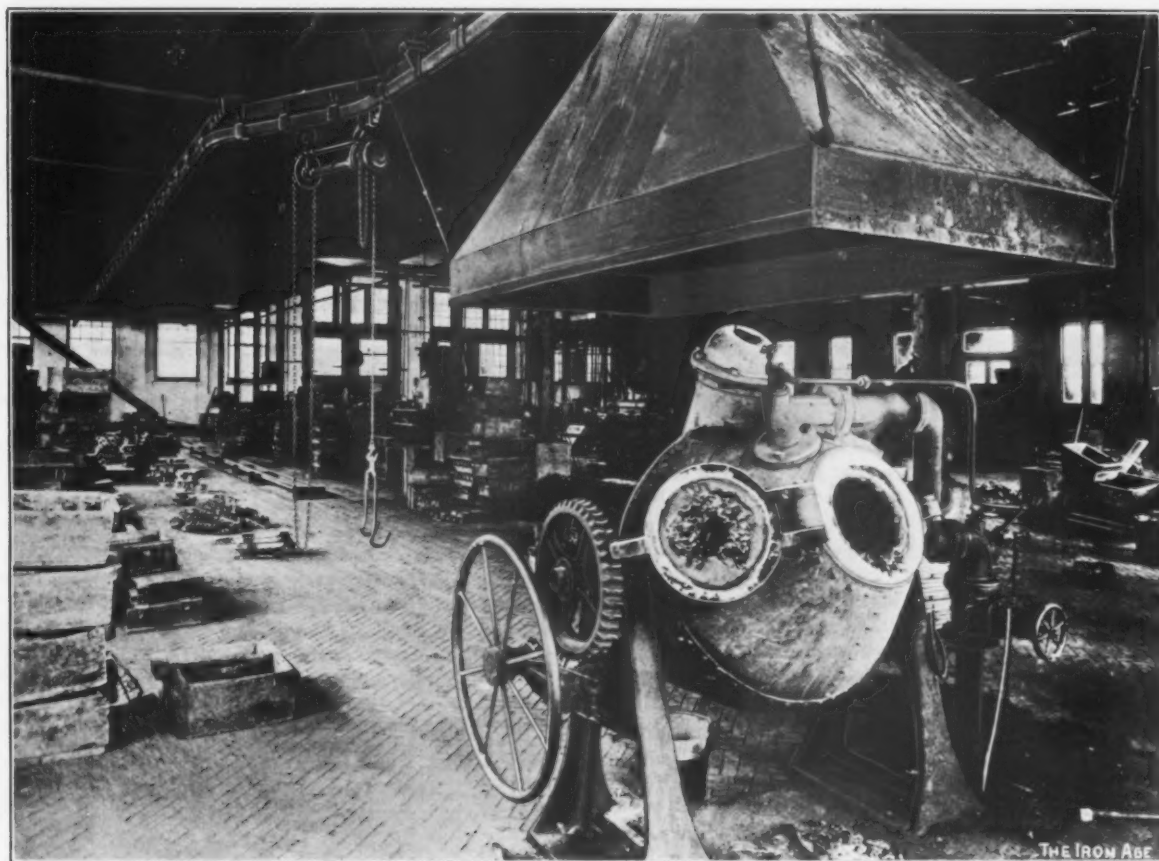


Fig. 12.—Interior of the Brass Foundry. One of Five Melting Furnaces.

minute, and current for power and lighting is supplied at potentials of 125 and 250 volts, the lower potential for the lights and the higher for the motors. The power and lighting circuits are entirely separate.

The power house contains also the air compressors, pumps, condensers, air pumps and feed water heater, all furnished by the Worthington Company or by some other subsidiary of the International Steam Pump Company. Air for the various pneumatic hoists and tools is furnished at 100 pounds pressure by a Laidlaw-Dunn-Gordon two-stage compressor, with 16 and 28 inch steam cylinders, 16 and 27 inch air cylinders and 24-inch stroke. It is equipped with Cincinnati valve gear and combination pressure and speed governors. There are two centrifugal pumps, one for the cooling tower and the other for the heating system. Heating throughout the plant is by hot water, all buildings being thoroughly piped. Pumps are provided also for the circulating system and for the hydraulic elevators. The water mains for fire protection are supplied by two Worthington fire pumps, each having a capacity of 1500 gallons per minute. The boiler feed pump is arranged so as to operate either compound or as two simple pumps. Auxiliary

department. There are two hose companies of eight men each, three ladder companies of four men each and a chief engineer and three assistant engineers. All live near the works. Ready for general use 2500 feet of hose has been provided, and there is 100 feet of hose at each of the 20 hydrant houses scattered over the grounds. Special hose is also placed in the pattern shop and in the pattern storage house. A weekly inspection is made of all valves, indicator posts, hydrants, fire pumps, hose and the entire fire protection equipment, and a detailed report is made as to the condition of each of the above on blanks prepared for the purpose.

In the yard a 15-ton locomotive crane and a 5-ton jib crane, with radius of 50 feet, facilitate the transfer of cars from shop to shop and the handling of materials from yard to cars. A casting storage yard 150 feet wide has been provided between the machine shop and erecting shop. Here the product of the foundry is kept in case it does not pass directly to the machine shop. A system has been provided for complete record of all such stock castings and for identifying and checking castings as taken from the storage yard. Each piece is given a number and this and descriptive memoranda con-



cerning the casting are recorded on a ticket, which goes to the office for filing. When the casting goes out of storage a similar card, though of different color, is sent to the office, containing similar description, and this card cancels the other. The card index record at the office gives complete information of the contents of the casting storage yard. A similar card record is kept in respect to the receipt and distribution of shop supplies. It may be said in this connection that the company's shop card system is notably complete and well conceived.

A Loomis-Pettibone gas plant of 2000 horse-power has been installed. Gas is used in the blacksmith shop, which has eight fires; in the Schwartz furnaces of the brass foundry, in the annealing ovens and in the core ovens.

### The Crucible Steel Company of America.

The fifth annual report to the stockholders of the Crucible Steel Company of America, Pittsburgh, for the year ending August 31, 1905, was issued October 6. The consolidated balance sheet is as follows:

Assets.	
Real estate, plant, equipment, &c.....	\$44,114,922.16
Additions and improvements.....	107,148.04
Total .....	\$44,222,070.20
Less Park Steel Company stock outstanding.....	217,100.00
Net total.....	\$44,004,970.20
Taxes and insurance paid in advance.....	74,720.28
Investments .....	128,400.00
Inventories .....	6,020,312.42
Bills and accounts receivable.....	1,891,698.25
Cash in bank and on hand.....	498,469.42
Deposited with Union Trust Company, trustee, for redemption of outstanding bonds.....	180,000.00
Total .....	\$52,798,570.57
Liabilities.	
Preferred stock out.....	\$24,436,500.00
Common stock out.....	24,578,400.00
Collateral 6 per cent. trust bonds out.....	1,567,000.00
Mortgages .....	171,932.56
Bills payable.....	1,095,335.28
Accounts payable.....	765,515.31
Interest accrued.....	50,406.72
Surplus:	
Net profits for the year.....	\$2,132,490.64
Deficit as at August 31, 1904, less adjustments .....	1,999,009.94
Surplus August 31, 1905.....	\$133,480.70
Less reserve for contingencies..	65,000.00
	68,480.70
Total .....	\$52,798,570.57

From the accompanying statement made by Chairman Wm. G. Park and President Frank B. Smith the following extracts are taken:

The accounts of the subsidiary companies have been consolidated during the year with those of the Crucible Steel Company of America, and the present balance sheet, therefore, shows in concise form a complete statement of the assets and liabilities of the company.

At the close of the fiscal year, August 31, 1904, the total debt of the company was \$6,203,767.06; at the close of the fiscal year, August 31, 1905, it was \$3,650,189.87, showing a reduction of \$2,553,577.19, including \$33,000 of bonded indebtedness.

During the year the company has met all its current obligations, and in addition has anticipated payment of notes covered by the collateral trust bonds to the amount of \$808,000. This improvement in the company's financial condition renders it unnecessary to issue any part of the \$7,000,000 bonds authorized at the last annual meeting.

The change in the capital stock account, shown in the balance sheet, is due to having deducted 5635 shares of preferred and 4216 shares of common stock, issued to the Union Trust Company of Pittsburgh at the time of the organization of the company and held by it as trustee, to be used for the acquisition of certain outstanding interests which were never acquired.

There are now no liens of any kind against the plants or properties of the company other than the collateral trust bonds and the mortgages (\$171,932.56) shown in the balance sheet. The amount of these mortgages represents the purchase price of several pieces of land at

Clairton, now under agreement of sale to the Clairton Steel Company.

The mortgage of \$180,000 held by the company on the Portsmouth Steel Company plant at the close of the last fiscal year has been satisfied, the company having accepted in lieu thereof \$102,400 in cash and \$80,000, par value, in first-mortgage bonds of that company, secured by the stock of the Whittaker-Glessner Company under an agreement which should fully protect the company's interests in that property. The mortgage held by the company on the Cumberland plant, \$32,500, has been paid off during the year and the proceeds passed into the treasury.

A large portion of the United States Steel Corporation bonds, held at the close of the last fiscal year, has been sold, and the proceeds used in the company's current business. The remaining 50 bonds now in the company's treasury are included in the assets at present market value.

The Park Steel Company stock still outstanding is, at par, \$217,100. The amount purchased by the company at a total cost of \$388,313.20, including interest and commission, has been charged into property account at the actual cost to the company.

Since the last annual statement the company has purchased the outstanding stock (about 25 per cent.) of the Canton Steel Company and now owns all that company's property and assets.

All expenditures made by the company during the year for maintenance, renewals and replacements having been charged to current operating expenses, and only actual additions and extensions charged to betterments, and as the physical condition of the company's plants is better than ever before, it was not necessary to charge off anything for depreciation.

The foreign business continues to grow and to show substantial returns, which encourages the company to further extend it. Plans are now under way looking to the establishment of branches in the Far East, including Japan, Korea and China. The outlook for business for the coming year is most encouraging. The amount of contracts and orders on the books of the company is larger than usual at this time of the year. If our expectations as to earnings are realized we see no reason why the company should not begin to pay dividends on the preferred stock in the near future, though for a time it may be advisable to make them less than the full rate.

The annual meeting of the stockholders will be held October 18.

### The New Scullin-Gallagher Steel Castings Plant.

The Scullin-Gallagher Iron & Steel Company, St. Louis, Mo., is erecting a second steel casting plant, which will have a capacity of 100 tons of finished castings per day. It will be run exclusively on machinery and miscellaneous castings, while the old works will run exclusively on car bolsters, couplers and general railroad castings. Four buildings are to be erected, as follows: Chipping and cleaning room, 75 x 300 feet; molding shop, 75 x 400 feet, furnace house, 68 x 400 feet; gas producer house, 50 x 120 feet. Four 20-ton basic open hearth furnaces will be installed. The furnace building will be commanded by a 10-ton electric crane and the furnaces will be served by an electric charging machine. Gas will be produced in six Forter-Miller gas producers, which will be installed by the Forter-Miller Engineering Company, Pittsburgh. The chipping and cleaning room will be commanded by two 15-ton electric traveling cranes running the entire length of the building, together with a 15 and a 5 ton independent trolley. The molding floor will be served by two 30-ton electric traveling cranes with crane ways running the entire length of the building and by two trolleys of 30 and 10 tons capacity each. The cranes and charging machines are being built by the Morgan Engineering Company, Alliance, Ohio. Fifteen jib cranes, to be operated by pneumatic hoists, will be distributed in the shipping and cleaning department and on the molding floor, and these will be operated by two air com-

pressors having 800 feet capacity each. The most modern sand blast machinery will be installed in the cleaning room, together with jumpers, planers, lathes, emery wheels, &c. The officers of the company are: John Scullin, president; Thos. M. Gallagher, vice-president; F. N. Johnson, second vice-president; J. N. Maher, general manager; V. C. Turner, secretary and treasurer.

### The Lake Superior Corporation.

The Lake Superior Corporation, successor to the Consolidated Lake Superior Company, 111 Broadway, New York, with properties at Sault Ste. Marie, Canada, has issued its first annual report, which was presented to the stockholders at the annual meeting held October 4 in Jersey City. Following is the balance sheet as of June 30, 1905:

<i>Assets.</i>	
Investment securities.....	\$51,201,928.15
Cash .....	76,004.92
Collateral security.....	150,000.00
Treasury bonds*.....	956,879.42
Furniture and fixtures.....	353.82
Due from subsidiary companies (for advances)...	1,531,542.60
<b>Total.....</b>	<b>\$53,916,542.60</b>

\* In addition to the bonds in the treasury there have been set aside and placed to the credit of the Algoma Central & Hudson Bay Company, to be used for the extension of its line:

Cash .....	\$61,652.67
First-mortgage bonds of Lake Superior Corporation.....	345,000.00
<i>Liabilities.</i>	
Capital stock.....	\$40,000,000.00
First-mortgage bonds.....	10,000,000.00
Income bonds.....	3,000,000.00
Bills payable.....	800,000.00
Canadian Improvement Company.....	4,677.30
Coupons unpaid, Nos. 1 and 2.....	25,900.00
Due subsidiary companies.....	29,399.61
Suspense account.....	22,019.52
Profit and loss.....	34,802.48
<b>Total.....</b>	<b>\$53,916,798.91</b>

The income for the fiscal year ending June 30, 1905, was as follows:

Interest on investment securities of subsidiary companies (from net earnings).....	\$543,455.02
Net interest from banks and other sources.....	42,084.20
<b>Coupons from first-mortgage bonds outstanding.....</b>	<b>\$585,539.22</b>
General expenses, taxes and organization costs.....	\$452,174.60
Balance credit profit and loss.....	98,562.14
<b>.....</b>	<b>34,802.48</b>
<b>.....</b>	<b>\$585,539.22</b>

The production for the fiscal year was:

Helen mine ore, tons.....	203,569
Pig iron, tons.....	66,235
Steel rails, tons.....	98,822
Ground wood pulp, tons.....	27,817
Lumber sales.....	\$233,147

The materials used were as follows:

	Tons.
Coal .....	67,025
Coke .....	80,458
Charcoal .....	14,966
Pig iron (manufactured).....	59,680
Pig iron (purchased).....	49,856

The Board of Directors for 1904-1905 is composed of the following: Alfred P. Boller, East Orange, N. J.; Dumont Clarke, New York; Francis H. Clergue, Sault Ste. Marie, Ont.; Thomas J. Drummond, Montreal, Canada; Charles S. Hinchman, Philadelphia, Pa.; Edmund Q. Trowbridge, New York; J. Tatnall Lea, Philadelphia, Pa.; Charles E. Orvis, New York; William H. Blummer, Sault Ste. Marie, Ont.; Francis B. Reeves, Philadelphia, Pa.; John T. Terry, New York; Charles D. Warren, Toronto, Ont.

The officers are as follows: Charles D. Warren, president; Charles E. Orvis, first vice-president; Thomas J. Drummond, second vice-president; John T. Terry, Jr., treasurer and secretary; Edward White, assistant treasurer and assistant secretary.

The subsidiary companies owned by the Lake Superior Corporation are as follows: Algoma Central & Hudson Bay Railway Company, Manitoulin & North Shore Railway Company, Algoma Commercial Company (Limited), Algoma Iron Works, British-America Express Company, Algoma Steel Company (Limited), Lake Superior Power Company, International Transit Company, Trans St. Mary's Traction Company, Tagona Water & Light Company and Sault Ste. Marie Pulp & Paper Company.

Following is an abstract of the report of President Charles D. Warren:

To properly appreciate the situation and the results it is necessary to recall that the properties were received in June, 1904, after a long period of idleness with its attendant demoralizing and accumulating disadvantages. They were also hampered by litigation and complications resulting from the most unfortunate condition of the old company. The last Canadian property to remain in the receiver's hands, the Lake Superior Power, has been released by the discharge of the receiver and has passed into the full control of the corporation within the past few days.

The expenditure was heavy both in time and money in putting such an extensive plant in full operation after a long period of inactivity, with scarcely more than one plant, the ground wood pulp mill, in condition for operation. Under these conditions profitable operations could not be established before the closing half of the year, and thus profits were depleted by expenses absolutely necessary to restore working conditions.

It is matter for congratulation that, following a combination of such conditions and circumstances, the aggregate net income of the plants operated is in excess of the fixed charges of the corporation. The old indebtedness has been practically all settled, with the exception of a few disputed claims and a number of small accounts. When these are all settled the balance of the treasury bonds for the uses of the corporation will probably be a little over \$1,000,000.

Under the wise provision of the plan of reorganization the corporation received \$1,000,000 in cash as working capital, which was in addition to the material and supplies held by the subsidiary companies. This sum, large in itself, was soon found to be inadequate for the requirements of the business, and it has been necessary to have recourse to loans in order to provide for the advantageous purchase and accumulation of stock and materials required by the subsidiary companies for continuous operation.

Plans have been considered for extensions and additions to the plant which will materially increase the earning capacity, but lack of ready moneys for this purpose has prevented action being taken beyond a very limited extent and on lines of extreme urgency. It is expected that this hindrance will be removed during the current fiscal year by the disposition of treasury bonds and by the sale of nickel matte and ore on hand and from the increasing net earnings.

It has been a matter of serious concern that the great power house of the Michigan Lake Superior Power Company, 1368 feet long, is unable to bear safely the strain of the full head of water required to develop the maximum horse-power, and the works necessary to make its security beyond question, upon the estimates of experienced engineers, will cost an amount beyond the present resources of the corporation. An agreement, however, has been reached between the Bondholders' Committee, representing the owners of the first-mortgage bonds of the Michigan Lake Superior Power Company, and the officers of the corporation, by which it will be possible to secure the amount required for the construction of the necessary work to place the power house in a satisfactory condition. This work will require several months and can be undertaken as soon as weather conditions permit next spring.

In the meantime power will continue to be furnished up to the limits of safety under the contract with the Union Carbide Company and for other purposes, and the corporation expects to be in a position to entertain applications for the sale of power early in 1907.

The outlook for the current year, viewed conservatively, is most encouraging. Barring unforeseen accidents, the output of rails with the present equipment should be 150,000 tons, 50 per cent. increase upon the production of last year, and at reduced cost, because of some new appliances now being installed. The two furnaces should produce this year nearly the amount of iron required for the present capacity of the rail plant, whereas last year it was necessary to purchase 50,000 tons of pig iron.

## The Strang Gas Engine.

A unique feature characterizes the operation of the gas engine invented by Henrick C. Strang and built by the Strang Engine Company, Harvey, Ill. This is the provision in the mixing chamber of an arrangement whereby a portion of the exploded charge is mingled with the new

which the main lines of the design are evident. The cylinder is supported on a hollow pedestal and is connected to the guide frame, which is supported under the shaft bearings by another hollow pedestal. Fig. 2 shows the connected jackets surrounding the walls and the heads of the cylinder, through which a continuous circulation of cooling water is maintained. The head at the

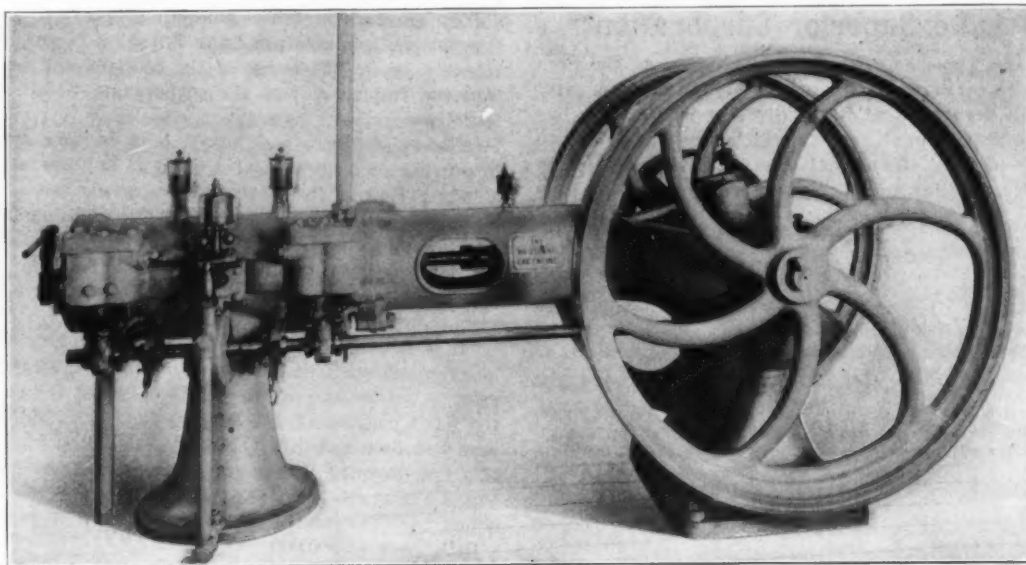


Fig. 1.—The Four-Cycle Double Acting Gas Engine Built by the Strang Engine Works, Harvey, Ill.

charge and returned to the engine. The object is economy, as there is a valuable residuum of unconsumed gas after an explosion, part of which may be saved by returning it with the fresh charge, and in addition an advantage is gained by heating the new charge. The engine is four cycle and double acting and is of simple construction, particularly in the mechanism for controlling the valves. Cool running is secured by a complete water

inner end of the cylinder is a part of the cylinder casting, and the outer head is a separate piece bolted to the cylinder. A stuffing box for the cylinder rod is bolted to the solid end of the cylinder. All of the valves are located at one side of the cylinder adjacent to the ends. Chambers *a* and *a'* contain the gas and air valves and the chambers *b* and *b'* the exhaust valves. The air and exhaust valves in each chest have a

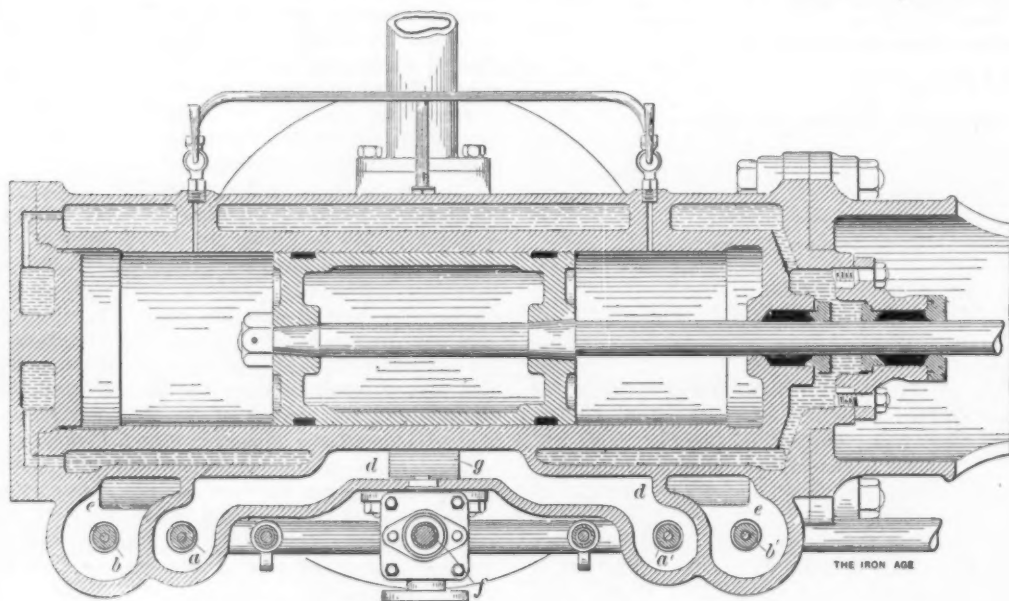


Fig. 2.—Horizontal Section of the Cylinder and Valve Chests.

jacketing of the cylinder walls and the cylinder heads. The engine is adapted to the use of distillate instead of coal gas if desired and may be so operated at a considerably reduced expense. In the company's plant an engine operated with distillate is stated to develop 30 horsepower at a cost of only 65 to 70 cents per ten-hour day, as compared with a cost of \$2.60 when using gas at \$1 per 1000 cubic feet, and \$4.25 to \$4.50 for a steam plant of corresponding size with coal at \$2 a ton. The latter, however, includes the cost of the engineer's time.

A general view of the engine is shown in Fig. 1, from

common contracted passage, *c*, Fig. 3, which leads to the corresponding end of the cylinder. The induction passages *d*, Fig. 2, lead to the respective air and gas valves at each end of the cylinder. The exhaust passages *e* communicate with the ends of the cylinder through the same ports, as may be seen in Fig. 3, and lead from the exhaust valves down under the cylinder at each end to a chamber in the base of the cylinder pedestal, from which the gases escape to the atmosphere through a pipe connected to the base.

The air for mixing with each charge is drawn in



through a number of holes in the pedestal under the cylinder and enters a chamber contained therein which communicates with the induction passages *d*. The gas supply is admitted through a governor supply valve, *f*. The volume of air admitted is controlled by a valve in the cylinder pedestal, which has a projecting handle which may be adjusted by hand. The air and gas mingle in the mixing chamber *g*, Fig. 2, and flow thence through the passages *d* to the respective air valves at each end of the cylinder. Having some distance to travel the air and gas become thoroughly mixed by the time they reach the valves.

The cam shaft actuating the valves extends underneath the valve chest and is driven from the crank shaft by spiral gears. The lower ends of the air and exhaust valve stems screw into cap plates *h*, Fig. 3, which rest on the outer ends of links, *i*, pivoted to the cylinder casting. Rollers in the outer ends of the links bear upon the cams. The cams are arranged in pairs at each end of the cyl-

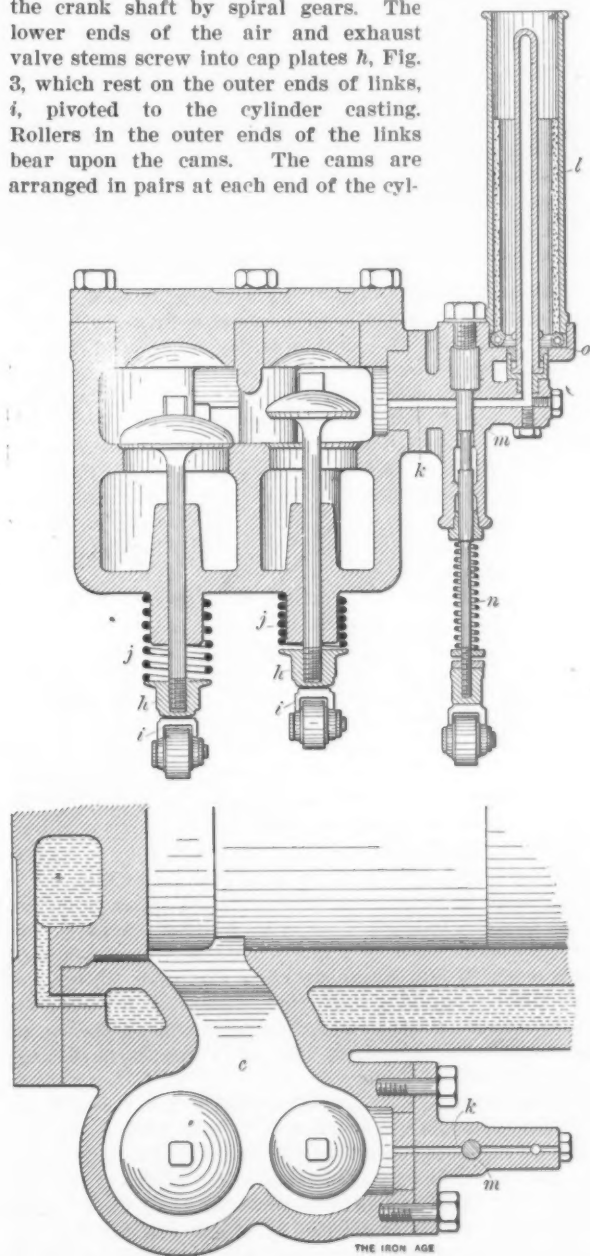


Fig. 3.—Vertical and Horizontal Sections Through One Valve Chest.

inder and are set to open and close the valves alternately at the proper time with reference to each other. The threaded connection of the valve stems with the cap plates allows adjusting their length to regulate the movement of the valves.

It is one of the peculiar features of this mechanism that the movement of the exhaust valves is timed so that they will not be fully closed until the piston has started on its return stroke after exhausting; consequently a portion of the previously exploded charge is drawn back and remains in the cylinder to mix with and heat the next fresh incoming charge. The portion of the mixture in the

cylinder which lies at the greatest distance from the initial point of ignition is only partly consumed, and as this is naturally the last to escape through the exhaust it is the part which is retained and remixed. This result is effected by using the valve chest as a remixing chamber for the retained part of the old charge and the new incoming charge. As the lower view in Fig. 3 indicates, the valve chest chambers are of considerable area and are inclosed by semicylindrical walls, which facilitate remixing. The springs *j* normally keep the air and exhaust valves in their closed position.

A companion valve casing is secured to each of the air valve chests and communicates with them through the

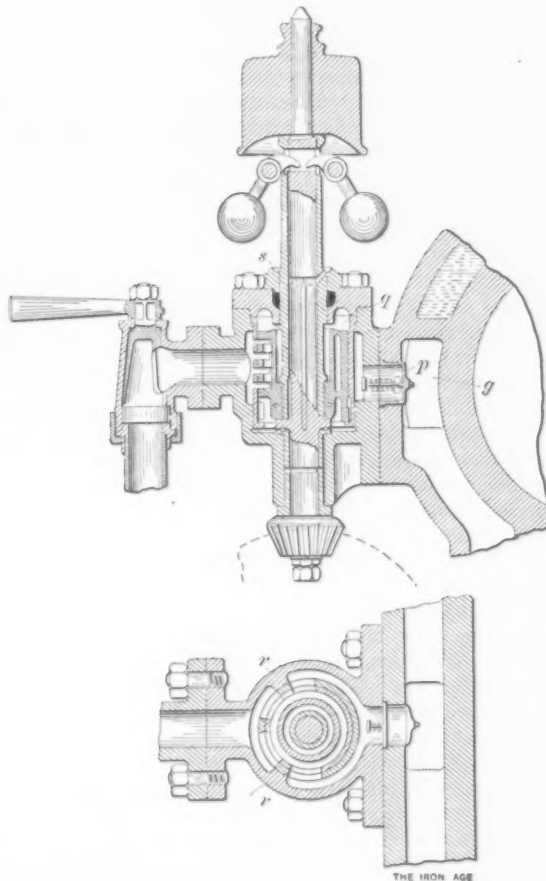


Fig. 4.—Vertical and Horizontal Sections of the Governor.

straight passage *k* leading from the igniting tubes *l*, Fig. 3. The timing valves *m* are formed on the upper end of the valve stems *n* and traverse the passage *k* in the operation of alternately opening and closing it. The gas for heating the igniting tube is supplied through a pipe controlled by a cock. The gas is conducted into a tubular ring, *o*, which surrounds the base of the igniting tube and is provided with a number of burners disposed at intervals and inclining inwardly. Air for permitting combustion is admitted through apertures beneath the burners. The lower ends of the timing valve stem rods are fitted similarly to those of the exhaust and air valves and are similarly actuated by cams on the cam shaft. Plugs at the outer ends of the passages *k* and *l* are removable to allow for cleaning out the passages.

The combined governor and supply regulator, Fig. 4, is bolted to the cylinder midway between the timing valves. The gas opening from the supply cock is in line with the air passage *g* leading to the air valves. The opening from the governor into this passage is normally held closed by the spring check valve *p* and opened by the suction of the piston. It prevents the gas from accidentally escaping through the air passages in the pedestal when the engine is at rest and the supply cock is left open. The equilibrium or governor valve *q* is inserted loosely in place and is separated from the inclosing wall of the casing by a lining surrounded by an annular space. The lining

has a number of ports in its opposite sides opening into the annular space, which is divided into compartments by webs, *r*, to completely separate the suction from the supply side, as shown in the sectional plan, Fig. 4. The valve *q* rests normally upon a flange projecting from the lining. The valve is cylindrical in cross section and hollow, inclosing an annular chamber. An inner flange on the valve enters a recess at the lower end of the sleeve *s*, but is normally not in contact with it, being supported by the flange on the lining. The sleeve is feathered to the governor spindle, so that it is obliged to rotate with it, but is free to move vertically. The lower end of the sleeve rests on a collar on the governor spindle and the upper end carries two lugs, to which are pivoted the fly ball arms of the governor. Fingers on the ends of these arms extend into a recess of the governor spindle. As the speed of the engine increases the governor balls, flying outwardly, cause the fingers to bear down on the governor spindle and thereby raise the sleeve and with it the valve. As it rises it diminishes the area of the gas admission ports, which checks any increase of speed and keeps it constant when the load varies. This governor is very sensitive and responds to a very small variation in speed. The governor spindle is driven by a bevel pinion on its lower end engaging a bevel gear on the cam shaft.

The operation of the engine is as follows: The explosive charge is admitted on the out stroke behind the piston to the back compression chamber through the gas and air valves. These valves close at the proper time, and on the return stroke the mixture is compressed in the chamber or space at the end of the cylinder and is then ignited at the proper time by the action of the timing valve, which admits the explosive agent, and an impulse is given to the back end of the piston. On the return stroke the burned gases are forced out through the exhaust. As before stated, the exhaust valve does not entirely close until the piston has traveled part way of the charging stroke, so that a portion of the exploded charge is retained. This being a double acting engine, the same operation takes place in the opposite end of the cylinder, and the forward impulse is succeeded by a backward impulse, or *vice versa*, so that during one revolution of the engine two impulses are given to the crank shaft. During the succeeding revolution of the engine the operation of the charging and discharging continues, so that at every second revolution two impulses are given. The engine is started by compressed air through a starting valve on the cylinder head.

The engines are built in sizes of from 50 to 500 brake horse-power. Those from 100 to 300 horse-power in size have two cylinders and give two impulses every revolution, and 300 horse-power engines have four cylinders.

### Developments in Utilization of Fuel Oil.

WASHINGTON, D. C., October 9, 1905.—An interesting chapter in the forthcoming annual report of the United States Geological Survey on the production of petroleum in 1904 is devoted to some of the recent developments in the utilization of crude oil for fuel for manufacturing and transportation purposes. The immense production of heavy petroleum in California in 1904, amounting to about 23,000,000 barrels, which represents 6,390,000 tons of coal such as was used in California, has solved the cheap fuel problem for the Pacific Coast and has opened up the possibilities of its becoming a great manufacturing district. The cost per barrel delivered at San Francisco is from \$1.40 to \$1.50, and as 3.8 barrels equal one ton of average coal imported, the equivalent of one ton of coal would cost about \$5 per ton.

#### Comparison with Coal.

Probably no more striking way of actually showing the relative commercial value of coal and oil as fuel could be presented than by stating that the Atchison, Topeka & Santa Fé Railroad Company made the following comparative tests of the cost per train mile of coal costing \$6.65 per ton and petroleum costing \$1.33 per barrel:

Twenty-five passenger and freight engines on a 30-day run used 2077 tons of oil and traveled 87,063 miles, or

419 miles per ton, or 3500 miles per month per engine. Oil at \$1.33 per barrel would at this figure cost 14.4 cents per mile. Twenty-five passenger and freight engines (same days, same track, and same condition) burning coal cost 23.2 cents per mile. The oil was 15° Baume. This showed a saving for oil of 38 per cent. The experiment was tried with coal at \$6.65 per ton, 4.1 barrels of oil being equivalent to one ton of coal. In this extended and practical test the cost of the oil per barrel was one-fifth of the cost of coal per ton. Stated in another form, the value of the two fuels would be the same when the price of the coal in tons was three and one-half times the price of the oil in barrels.

The Southern Pacific Railway Company has changed 780 of its locomotives from coal to petroleum fuel out of 1350. Those on the Ashland division north of Ashland continue to burn coal.

There are now 140 steamers, large and small, using petroleum that ply in and out of San Francisco, aggregating about 130,000 gross tons. There are petroleum fuel storage stations at the Hawaiian Islands and Alaska, also at a number of ports in Asia, but most of the steamers take sufficient petroleum fuel to make the outward and return trip.

#### Advantages of Fuel Oil.

As 1200 pounds of petroleum are equivalent to one ton of 2000 pounds of coal there is a saving of 40 per cent. in weight. If a double supply was loaded the excess of weight would be only 20 per cent. The steamship *Mariposa* has been making regular trips between San Francisco and Tahiti for several years, the round trip being over 7500 miles. The oil tanks were constructed out of the coal bunker space forward of the boilers and separated from the boiler room by a water-tight bulkhead 4 feet between walls, and 48 feet farther forward a similar bulkhead was constructed. This tank space was divided by a middle and two crosswise divisions, making six compartments. Each had a small opening at the top to permit the gas to pass off to the ventilating tank. The total capacity of these tanks was about 905 tons, or 6,338 barrels. While the petroleum fuel as installed on the *Mariposa* was in every way satisfactory, the result of the trials do not give a comparison with coal fuel.

More perfect comparative tests were made on the *Alameda*, sister ship to the *Mariposa*, running between San Francisco and Honolulu, Hawaii, as to the relative value of petroleum and the ordinary bituminous coal purchased at San Francisco, Cal. The results of a number of these carefully made tests show that 1 pound of petroleum does the same work in evaporating water in boilers that requires 1.42 pounds of coal, which gives 4.2 barrels of petroleum equal to 1 ton of coal, and as 1 pound of petroleum in San Francisco costs less than 1 pound of coal the economy is apparent. These results were obtained when the crew of the *Alameda* was inexperienced in firing with petroleum, and better results have since been secured.

The comparative cost of the fuel is not the only advantage in using petroleum fuel. Other advantages are: The services of over one-half of the crew in the fireroom dispensed with; a great increase in the radius of the fuel limit; increased evaporative power of the boilers; quick manner in which steam can be raised and the development of the boilers' maximum capacity; shutting off of the flow to the boilers when the demand suddenly ceases, and absence of smoke and dust and dirt incident to shipping a supply of coal. There is a great advantage in the manner in which liquid fuel can be stored in the double bottom where it would be impossible to store coal. The use of liquid fuel requires extra caution in securing petroleum which has had the more volatile portions driven off by distillation or heating, as all crude oil carries a slight percentage of the more volatile petroleum. The flash test should not be less than 180 degrees F. Care should be taken in the removal of gases that will collect in the upper portions of tanks as the fuel is removed, and the complete removal of the possibility of the jumping of an electric spark in the fuel tanks.

The United States Naval Liquid Fuel Board made an



exhaustive test with Texas crude petroleum in 1904, burned under a Hohenstein water tube boiler, at Washington, D. C., under conditions similar in many respects to those of actual service on shipboard.

Petroleum fuel is being introduced into smelters in California and in Arizona, and has for several years superseded coal to a very great extent in the generation of steam.

W. L. C.

### The Production of Aluminum in 1904.

WASHINGTON, D. C., October 7, 1905.—The production of aluminum in the United States has increased nearly ten-fold in as many years, according to the annual report of the United States Geological Survey for 1904, which has just been completed. Two reasons explain this phenomenal growth—economic production, which has initiated low prices, and increased consumption, especially in the electrical industry. The output of 1904 was 8,600,000 pounds, as compared with 7,500,000 pounds in 1903 and 7,300,000 pounds in 1902. When it is remembered that the industry dates its beginning from 1883, in which year the production was 83 pounds, its rapid development will be appreciated. It was not until 1891 that the output reached 100,000 pounds, but from that date the increase has been phenomenal.

#### Progress of the Industry.

During the year 1904 the Pittsburg Reduction Company, the only producer in this country, improved its plants at New Kensington, Pa.; Niagara Falls, N. Y.; East St. Louis, Ill.; Bauxite, Ark., and Shawenegan Falls, Quebec. The prosperity in the aluminum industry has been shared also by the Royal Aluminum Company, Shawenegan Falls, Quebec, Canada; the British Aluminum Company, with works at Foyers, Scotland; the Société Electro-Metallurgique Française of Le Praz, Savoy, France; the Compagnie des Produits Chimiques d'Alais of St. Michel, Savoy, France, and the Aluminum-Industrie-Aktien-Gesellschaft of Neuhausen, Switzerland; Rheinfelden, Baden, Germany, and Lend Gasteln, near Salzburg, Austria. The processes employed are the Hall in the United States and Canada, the Hall and Minet and the Héroult in France and the Héroult in Switzerland, Germany and Austria. A departure of some interest is the attempt to utilize the extensive deposits of bauxite at Lecce, Italy, and the water falls of Pescara to generate electric power for the purpose of manufacturing aluminum. It is understood that Italian and German capital has become interested in this new enterprise.

#### The World's Production.

The world's production of aluminum in 1903, the latest year for which figures are available, was 8252 metric tons of 2204 pounds, distributed as follows: United States, 3400 tons; Switzerland, 2500 tons; France, 1700 tons; United Kingdom, 650 tons.

Aside from the electrical industry, in which aluminum is gaining favor as a substitute for copper conductors for the transmission of light and power, there has been expansion in other directions. The steel industry has become an important consumer of aluminum. Usually from 2 to 5 ounces of aluminum are employed per ton of open-hearth steel made and from 6 to 8 ounces for Bessemer steel. The object in adding aluminum in the casting ladle is to reduce the slag or oxide formed while pouring the steel. If every ton of steel manufactured in the United States in 1904 had been subjected to this treatment there would have been something like 5,000,000 pounds of aluminum consumed. Among the other uses of aluminum may be mentioned spools and bobbins for textile mill work, household and military utensils, parts of vibrating and reciprocating machines, equipments for railway cars, oil cups on locomotive driving shafts, pigment and foil to replace silver and tin, letter boxes, lithographic plates, alloys, in pyrotechny as a substitute for magnesium, in patented explosives like ammonal, in pattern making to replace wood, acid carboys and other chemical vessels; cash checks, bicycle and motor car fittings, chains for hoisting and jewelry.

#### Aluminum Alloys.

The production of alloys is a fertile field for invention, to judge by the many patents issued for aluminum alloys having unusual hardness, strength and resistance to distortion from impact, pressure or extension, and with the further advantage of melting readily at a low temperature and of flowing freely and shrinking little on cooling. These alloys contain varying percentages of aluminum in combination with copper, nickel, silver, zinc, magnesium, manganese, tin, chromium, tungsten, titanium and vanadium. Some of the better known alloys are partinium, magnallium, zincalium, albradium, almand, macadamite, ferroaluminum, wolframium, romanium, aluminum-nickel, aluminum-zinc and aluminum-silver.

W. L. C.

### Pacific Coast Trade Movements.

SAN FRANCISCO, CAL., September 30, 1905.

Following the declaration of peace the steamers going hence to the Orient had comparatively small cargoes, but the Manchuria, which cleared September 23, took out an unusually large cargo, valued at more than \$1,000,000, the principal part of which was intended for Japan, though the Philippine Islands also figured largely in it.

By the way, the exports to the Philippines for the past few months have been increasing in variety and quantity. For a couple of years the leading shipments consisted of beer and whisky. Though these are still large, they no longer form an undue proportion of the shipments. Among the articles that figure prominently are machinery and agricultural implements. The shipment of machinery to the Philippines through this port has of late assumed considerable importance and from the looks of things it is likely to be more important yet. The Doric, which cleared September 20, had \$17,375 worth of machinery for Manila. The same vessel had nearly \$40,000 worth for Japan.

The shipments of machinery to the Hawaiian Islands are large also, while that of pipe, principally sheet iron pipe for irrigation and other purposes, is unusually heavy. The Alameda, which sails to-day, takes a large quantity, as also did the same steamer on its previous trip. The Australian steamers from this port, the Sierra and the Ventura, have been taking monthly large consignments to Honolulu, sometimes as much as \$100,000 worth, of which a great part was machinery, pipe and hardware of various descriptions, with agricultural implements every now and again. The shipments to the Hawaiian Islands from this port have been increasing this year, and if the increase keeps on as it has been doing 1905 will be about the largest in such shipments from San Francisco.

Imports have been falling off of late both by sea and rail, by sea particularly. Though we have had several vessels in from Antwerp and other European ports during the past few weeks, the proportion of iron, steel, hardware, &c., has not been large. There is nothing like the quantity of structural iron and steel coming from Europe as in other years, although the demands of the building trade are and must be very large. Every week sees one or two new buildings planned, all the way from 6 to 14 stories, the frame work of which will consist of structural steel. Supplies of this kind must now be obtained by rail, although the railroad authorities no longer report the quantity of such articles. Vast quantities of iron pipe have been brought here from Eastern establishments during the past few years. The improvements being made in city and country, the laying down of new gas mains, &c., call for a steadily increasing amount, and next year will perhaps see the greatest demand in the history of the business. To give an illustration, we may note that the new San Francisco Coke & Gas Company has ordered within the past three months over 36 miles for the streets of this city. But that is only the beginning. The company means to parallel the pipes of the San Francisco Gas & Electric Company, and should it retire from the field, as is possible, a new corporation now being formed by a combination of interests will have to renew the greater part of the old works. Hence the shops of the manufacturers in this city are looking forward to an unusually busy year.

J. O. L.



### The Taylor-Newbold Saw.\*

The Taylor-Newbold saw has often been referred to as a high speed saw, but high speed does not necessarily mean high cutting velocity. It refers more definitely to the advance made through any section of metal which may be accomplished by high cutting speed with a comparatively light feed or by heavy feed with a slower cutting speed. The latter way is the best, as the coarser the chips the less will be the work per cubic inch of metal removed, because less energy is expended in grinding the metal to powder. It also involves the traversing of less surface by the cutting edge, which reduces wear and tear on the teeth. On such work as rough castings containing more or less sand it is evident that a high speed with a fine feed rubbing against the gritty surface would grind the teeth away much faster than a heavy

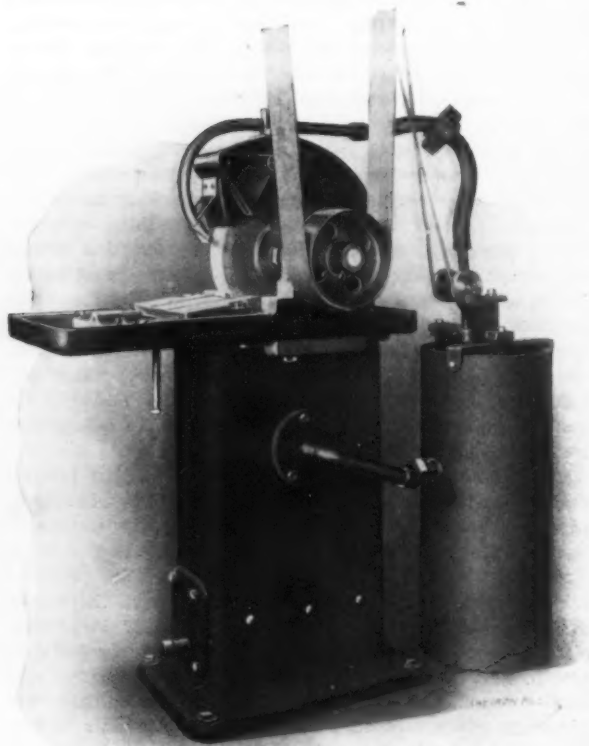


Fig. 1.—The Taylor Grinder for Sharpening the Saw Teeth.

feed, which would get beneath the sand pockets and cut away the metal more rapidly.

A heavy feed necessitates great cutting strength in the saw teeth. It has been the object in the Taylor-Newbold saw to provide inserted teeth which should have a maximum cutting strength and the maximum resistance to abrasion, allowing at the same time for the immediate removing of broken or damaged parts and protecting the saw blade itself against damage as far as possible. Inserted teeth saws are not new. They have appeared in various forms for ten years, but the teeth of such saws have lacked adequate strength and the breaking of a cutter is attended with more or less damage to the saw disk.

[The part of the paper pertaining to the construction of the saw has been omitted because it is now generally familiar to the trade. A full description was printed in *The Iron Age* June 2, 1904.]

A peculiar feature of the construction is that the teeth are alternately broad and narrow, the narrow teeth being set out farther than the wide teeth, to divide cutting between them. The teeth are ground in a grinding chuck to an exact shape by means of a former. Fig. 1 shows the Taylor grinder, which is used, and Figs. 2 and 3 present details of the grinding chuck, showing how the two surfaces to be ground are presented to the wheel. By

this means all the wide teeth are ground exactly alike and all the narrow teeth also.

A set screw beneath the tooth holders allows the adjusting of the teeth inserted in the saw to exactly the same height as the other teeth. The adjustment is made before the teeth are inserted, for which purpose a set gauge is used. The gauge represents a section of the



Fig. 2.—Holder for Grinding the Ends of the Teeth.

periphery of the saw, and a small rider is adjusted to move over the top of the tooth to indicate its proper height. A set of teeth can be adjusted to uniform height for inserting in the saw, and when a change of teeth is necessary the time required will be simply that of knocking out the wedges, removing the old teeth and inserting the new ones. This enables the saw to be kept in practically continuous service, whereas if time were taken to set teeth in the saw and then bring them all to the same



Fig. 3.—Holder for Grinding the Tops of the Teeth.

height it would entail delays. It is advisable to have an extra set of cutters ground and ready for immediate use, and where the work is heavy and continuous two or three sets can be used to advantage.

The best high speed steel is used in the cutters and the treatment of this steel by the Taylor-White process is conducive to the highest efficiency and the most satisfactory results. The life of the saw depends upon this treatment more than upon any other one thing.

Saws from 6 to 60 inches diameter are kept in stock by the manufacturer, the Tabor Mfg. Company, and

\* From a paper by Sidney Newbold of the Tabor Mfg. Company, Philadelphia, read before the Philadelphia Foundrymen's Association October 4, 1905.

larger sizes are made to order. These vary in thickness from 3-16 inch on smaller sizes to  $\frac{3}{4}$  inch on the 60-inch size. The commercial sizes of saws most used range from 18 to 40 inches diameter.

The capacity and durability of the saw was shown by one of 36-inch diameter, which after running day and night for two weeks on various steel forgings without regrinding cut through a 0.35 carbon steel forging 14 inches wide and 9 inches thick in 17 minutes. Another saw, 40 inches in diameter, was run for three months on steel castings without grinding. It is not advisable, however, to allow the teeth to go so long without regrinding. This saw would have done better work if the teeth had been ground more frequently.

It should be understood that the tremendous cutting pressure on the teeth of this saw requires unusual precaution in holding the work. Clamps which ordinarily hold work for solid disk saws are often inadequate for a Taylor-Newbold saw. When the work slips nothing can save the saw from buckling. The work must be held securely and the teeth must be set to cut evenly to avoid

### National Wire Changes and Improvements.

Herbert Smith has been elected general manager of the National Steel & Wire Company and the National Wire Corporation, which office also carries with it the management of the National Steel Foundry Company, New Haven, Conn. Walter H. Seaver, who has been vice-president and sales agent of the National Wire Corporation, has resigned, General Manager Smith taking over both sales and purchasing departments. Mr. Smith was recently for six years manager of the wire works of Dorman, Long & Co., Limited, Middlesbrough, England, and before that time was with the Washburn & Moen Mfg. Company, Worcester Works, Worcester, Mass., as head of the barb wire and specialties departments. A general reorganization of the management of the several corporations is being effected, including radical changes in the personnel. An important change is the transfer of the sales department from 114 Liberty street, New York, to the New Haven offices. In other

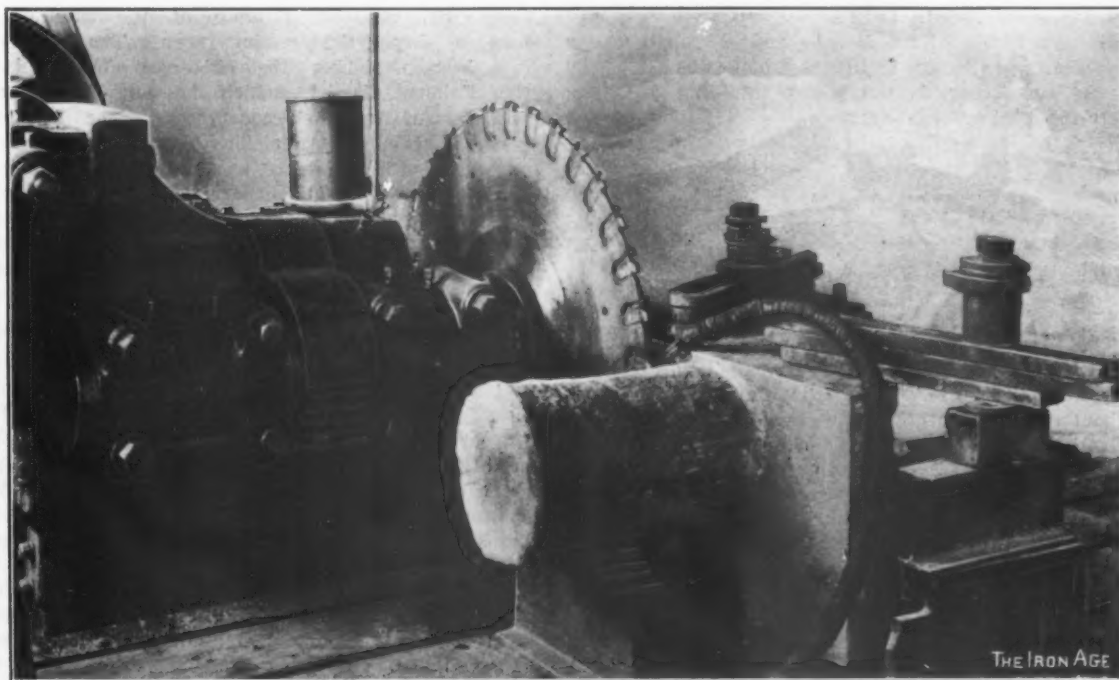


Fig. 4.—Taylor-Newbold Saw Cutting a Heavy Riser on a Steel Casting.

side stress. Either the slipping of work or the wearing away of one side of the teeth may cause the saw to buckle.

These saws are used largely in steel foundries, forge shops, structural and rail mills, and there is no reason why they should not be used in cast iron foundries, particularly where there are heavy sinking heads to be cut off. Fig. 4 is an interesting view of the saw cutting off a heavy riser on a steel casting.

**The Gayley Dry Air Blast in September.**—The September record of two Isabella furnaces at Pittsburgh, one of which is operating on the Gayley dry air blast and the other on ordinary blast, is interesting. No. 1 furnace, with the Gayley refrigerating plant, made a ton of iron with 1939 pounds of coke, while No. 3, using ordinary blast, required 2339 pounds, a lowering of the coke consumption in favor of the Gayley dry air blast of 400 pounds per ton of iron. No. 1 furnace made 413 tons of iron per day, as compared with 362 tons for No. 3, a gain of 51 tons per day. It should be noted that No. 1 was running on Bessemer pig iron and No. 3 on basic, the former carrying 0.5 per cent. of silicon more, so that the iron made in No. 1 should really have used more fuel.

words, the various departments of management have been consolidated at New Haven. E. H. Parker, formerly with the Washburn & Moen works, has been made general superintendent of the New Haven works.

Large improvements in the works are being made. A new building, 125 x 250 feet, is to be erected for the galvanizing department, and several of the present buildings are being altered, with additional floors and other changes to increase the available manufacturing area. The result will be an increase in capacity of more than 50 per cent. The National Wire Corporation will establish a department for the manufacture of wire nails, a former product which was discontinued. The department will have a capacity of from 200 to 300 kegs daily, of the regular lines.

A new mutual benefit association has been organized, under the direction of General Manager Smith, on the English system. Every one of the more than 1000 employees of the New Haven works has voluntarily become a member of the association, agreeing to pay an assessment of 15 cents a week. In exchange for this each is insured against sickness or accident, being entitled to a weekly benefit of \$6. Under the agreement, if there is a surplus at the end of the year above a conservatively figured reserve, the excess will be distributed as a dividend among the members.

## Mining Equipment Greatly Improved.

### Electric Trammimg.

DULUTH, MINN., October 7, 1905.—The electric trammimg system inaugurated at the Monroe and Tener mines, belonging to the United States Steel Corporation on the Mesaba range, has been started up for the first time and mining will hereafter be by means of it. The system is quite elaborate, and was installed by the General Electric Company. Contracts have been given the same company, through R. A. Swain, its resident agent at Duluth, for electric installations at the Fayal mine, Eveleth, Minn., and the Queen and Hartford mines, Negaunee, Mich. These will be in place before the opening of navigation next year. The Monroe has been in the hands of stripping contractors for the past year and more, and now a considerable area of the immense open pit south of B. Monroe shaft is cleaned up on the ore. This stripping is being enlarged and the ore surface is increasing very fast. No milling has begun, for the raises have not yet been run out, but by the coming year the mine will be in shape to ship very largely, possibly up to 1,000,000 tons a year if needed. It is a very large ore body, one of the great ones of the Mesaba range. North of the three shafts, which are in line east and west across the Monroe and Tener, is the winter mining proposition, where the ore is covered by a rock capping. The greater part of the ore south of the shafts is to be milled or mined by caving, and this will be served by the electric tram locomotives. The underground layout has been planned to admit of the utmost expedition in trammimg and is along the line the Oliver Iron Mining Company has adopted for its large new mines.

### Standardizing Equipment.

The Oliver Company is standardizing everything in its mechanical department as rapidly as possible. Where a concern is buying old mines that have been equipped without reference to any other property, and in accord with the individual preference of managers, it has thrown on its hands an immense amount of machinery—boilers, pumps, hoists, etc., of every description, yet too good to be wasted and available for its uses. In such event this process of standardization is necessarily very slow. But it is being worked out and in course of time will have been accomplished. It extends to boiler and engine houses, stacks, and everything about the mines within reasonable limits. The company has six new boiler houses to erect during the coming few months and has been installing a number of big underground pumps, most of them crank and fly wheel, with Prescott water ends and any type of Corliss engines that is available. Its pumping plant at Monroe-Tener is now going in, and is to have a capacity of 5000 gallons a minute from the 265-foot drift. The water end of the old Penobscot mammoth pumping engines, which came to the Oliver Company through the purchase of the Union Steel Company, has been placed at the Pioneer, while the steam end is elsewhere. The Zenith's new vertical steel shaft has just been provided with a high grade crank and fly wheel pumping engine, and at the Hull there is a large plant of the same character.

In the matter of underground electric trams the General Electric type seems to have been favored and is going in at several mines, while more are planned for the near future. It is quite probable that six or eight of these plants will have been installed within the coming year. In the new shops that are going up for the company at mining centers of importance the Westinghouse Company is installing electric power and transmission plants.

General Manager Coulby of the Pittsburgh Steamship Company has notified all ship owners having contracts for the delivery of Oliver Company ore during the remainder of this year, that he expects these contracts to be fully carried out, and that no deviation will be permitted. It is needless to say that the suggestion of Mr. Coulby will be carefully complied with, for the United States Steel Corporation, which owns both the

Pittsburgh Steamship and Oliver Mining Companies, is too valuable a client for any ship owner to offend. The Oliver ore contracts are well up and will expire rather early. Indeed, some of them have been expiring already, but it is evident that the company's early ideas of its ore requirements have not been lessened, at least, by recent events of the iron trade.

### Corrigan, McKinney & Co.'s Improvements.

A most complete mining plant has been ordered for Corrigan, McKinney & Co.'s Tobin mine at Crystal Falls. Part of it is in operation, giving great satisfaction. Tobin mine has been under process of development for the past three or four years and is proving to be one of the large mines of the Menominee range. It is the brightest success in the way of new mines on that range. The plant has 500 horse-power of boilers, fitted with a fuel economizer to heat the feed water. There is a first motion Nordberg hoist with 10-foot drums, a Rand 30-drill compressor of the latest type, and a Jeffry electric haulage plant with a locomotive of 5 tons capacity. This latter is not yet in place. Two shafts have been equipped and are complete with double deck cages. The mine will probably produce at the rate of 2000 tons a day the coming year. The same firm has been exploring the old Star West mine of the Palmer district, which is only known as a producer of lean, siliceous ores. The sinking of a new shaft on this mine has been referred to in this correspondence. This shaft has now cut ore running from 62 to 65 per cent., and of excellent character, and the mine is to be equipped and opened for a large production the coming year. This is an important matter for the Cascade range and gives hope that elsewhere on the range the same intelligent explorations may result similarly, as indeed they have in one or two instances.

### New Western Mesaba Mines.

Two mines are being opened on the Western Mesaba, one of which will be shipping in November. This is the old Pearce, now under control of its fee owners, Pillsbury, Bennett & Longyear, who have put O. B. Warren in charge, and are cleaning up preparatory to mining. It was a Sellwood mine before last year. The second is the St. Paul, a property taken a year or more ago by Corrigan, McKinney & Co., and which is now to be developed for underground mining. This property lies in the east one-half of the southeast one-fourth of section 23-57-22, and is about five miles west of the Stevenson. The mine will ship next year. It has a fair body of good ore. Still further west the Oliver Iron Mining Company is starting a third shaft on its Canisteo mine, sections 30 and 31, 56-24. No. 1 shaft is still used, as it has been all summer, for pumping; No. 2 is developing a mine, and No. 3 is started south of the road in section 31 to develop more ore. The winter will be exceedingly active around this property and a great showing is looked for by next spring.

### On the Marquette Range.

At Negaunee the Breitung Hematite has resumed operations after a year's idleness. It will ship some ore this fall. The company's Mary Charlotte is busy all the year. There are more drills working near Negaunee than in any previous time. Pickands, Mather & Co. have three on the Gaffney tract under option to them for the coming year; the Cleveland Cliffs has three between the Negaunee and Maas mines and five more near Swanzy; and the Jones & Laughlins Steel Company has four and is sinking a shaft at the old Rolling Mill mine, which has shown better ore under the lean siliceous upper strata. A drill is to be taken to the newly found iron ore croppings discovered near Alston, west of the Taylor location in Houghton County. This is a wild guess at present, but may be something worth while; at any rate it is worth investigation.

Near Stambaugh on some of the Seldon lands, Oglebay, Norton & Co. have begun work of exploration. At the Baker and Tully properties a large shaft has been started and the work of sinking will be pushed vigorously



from this time forward. At the Caspian mine of Pickands, Mather & Co. very large ore bodies are being shown, and the mine is giving promise of much importance.

#### New Shipping Piers.

Work has begun on two of the three or four ore shipping piers that are to be built for next year's business. These two are those of the Duluth, South Shore & Atlantic, at Marquette, and the Chicago, Milwaukee & St. Paul, at Wells, near Escanaba. The former is to be 1200 feet pocket length, 70 feet high, and to have 200 250-ton pockets, with 50,000 tons storage. It is to cost about \$400,000. The second is to be 1450 feet long, 70 feet high, to have 300 pockets, or capacity for 75,000 tons, and is to cost about \$500,000. The two will consume 13,500,000 feet of timber besides about 14,000 piles.

#### Looking for Coal.

An interesting exploration now under way is that of some Duluth parties for coal, at a point on the Northern Pacific Railroad, 30 miles south of Duluth. They have been sinking a pit through the carbonaceous slates, and have met with more or less pyritic graphitic slate which has gradually been cleaning up and at the depth of 25 feet became apparently a good variety of semi-anthracite. The region is chiefly rolling, morainic till, but at Mahtowa an area of Keewatin slates and schists outcrops, while a few miles to the south a still larger area of the same shows. The glacial outlet of Lake Superior was down through the valley where this digging is now going on. At present work in the pit has been stopped, and the operators are attempting to secure lands in the neighborhood before resumption. D. E. W.

#### Prospects for Revenue Legislation.

WASHINGTON, D. C., October 10, 1905.—The opponents of tariff revision are deriving much satisfaction from the showing made in the Treasury statement covering the first quarter of the current calendar year, from which it appears that the deficit is rapidly dwindling, amounting on the 1st instant to only \$9,747,684, as compared with \$18,249,523 on the corresponding date a year ago. They now freely predict that in spite of the pressure that will be brought to bear to secure modifications of the Dingley act in the coming Congress there will be no tariff legislation excepting, perhaps, the imposition of a small duty on coffee. It is stated quite authoritatively that the President in his forthcoming message will ignore the tariff question entirely, although it is conceded that he will probably call the attention of Congress to the importance of providing sufficient additional revenue to prevent the recurrence of the deficit.

The reduced deficit is due almost entirely to an unexpectedly large increase in customs revenues. It is hardly to be expected that this increase in customs receipts for the first quarter of the current fiscal year, which is at the rate of \$40,000,000 per annum, representing \$80,000,000 additional imports of dutiable merchandise, will be continued throughout the year. From information secured at the leading ports of the country it seems probable that a considerable portion of the gain in receipts is due to unusually early importations, which presumably will be offset to some extent later on by a decline. That the fiscal year will show a substantial increase in customs revenue, however, is not questioned, and it is probable that iron and steel products will furnish a proportionate share of this gain.

Although the deficit shows an important decline, it is the opinion of Treasury experts that a very considerable shortage in revenues will have to be made good at the end of the current fiscal year from the available cash balance. The appropriations to be made during the coming session will materially exceed those of last year as it will be the first session of a new Congress, and there is therefore reason to believe that the fiscal year 1907 will end with a larger deficit than 1906. With this outlook it is not surprising that the Treasury officials should desire the enactment of legislation to produce at least enough additional revenue to close the prospective gaps.

Considerable support has been found for the proposi-

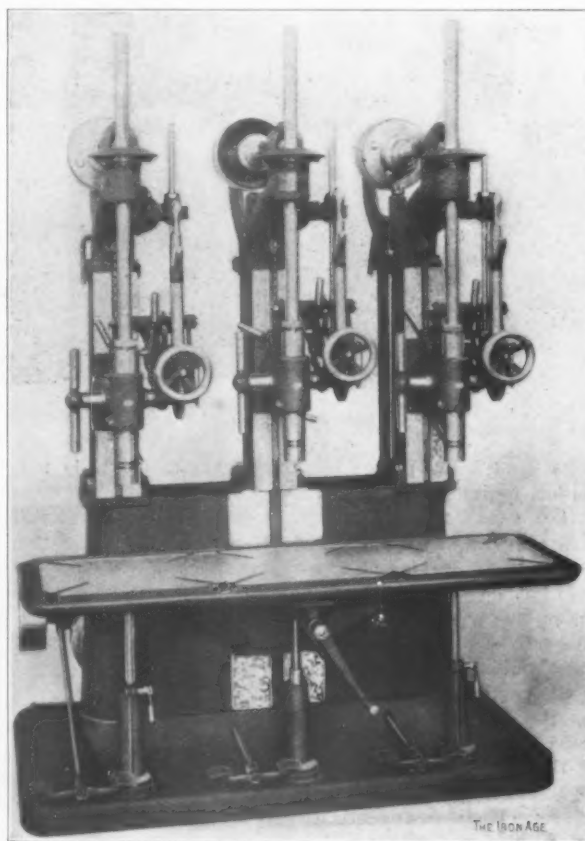
tion to tax coffee from 3 to 5 cents per pound, and various modifications of the internal revenue taxes on liquors are under consideration, most of which involve the granting of free denatured alcohol for manufacturing purposes.

W. L. C.

#### A New Barnes Sliding Head Gang Drill.

The new 23-inch sliding head gang drill manufactured by the B. F. Barnes Company, Rockford, Ill., and furnished with two, three or four spindles, has the same driving power and drilling capacity as the company's 23-inch stationary drill. The sliding heads may be adjusted for variations in the height of the work. Each spindle has a back brace and one of the spindles, usually the left-hand one, is driven by a reversing friction countershaft, so that the spindle may be used for tapping.

The spindles are each 1 11-16 inches in diameter and have a vertical travel of 12 inches. The table has a



A Barnes 23-Inch Three-Spindle Drill.

travel of 14 inches and the sliding heads 18 inches. The distance from center to center of spindles is 20 inches and the greatest distance from the spindle to the table is 33 inches. The spindles are driven separately by quarter turn belt from countershafts, so that the speeds and feeds of one spindle are independent of those of the others. Any or all of the spindles will be furnished by the manufacturer either with plain lever, wheel and lever or power feed and automatic stop, including wheel and lever and with or without back gears. The three-spindle drill illustrated herewith has an over all height of 85 1/4 inches and weighs 4400 pounds.

The manufacturers of malleable iron castings are exceedingly busy, in fact some of them, and probably all, are nearly swamped with orders. Not only are regular customers on their books for unusual quantities of castings, but orders are being received from entirely unexpected quarters, from people who had never been heard of as possible customers, and from old customers who long ago left the founders to go to some other maker of malleable castings.

### The New Peck Automatic Drop Lifter.

A new model automatic drop lifter made by the Miner & Peck Mfg. Company, New Haven, Conn., has been designed to do away with the one drawback of the old Peck drop lifter, which has been on the market for years. This was its inability to give as quick and snappy a blow as a friction board lifter, although in many classes of work its durability more than compensated for this disadvantage. Durability is obtained mainly as a result of using the crank principle in the operating mechanism, by virtue of which less strain is exerted on the parts of the

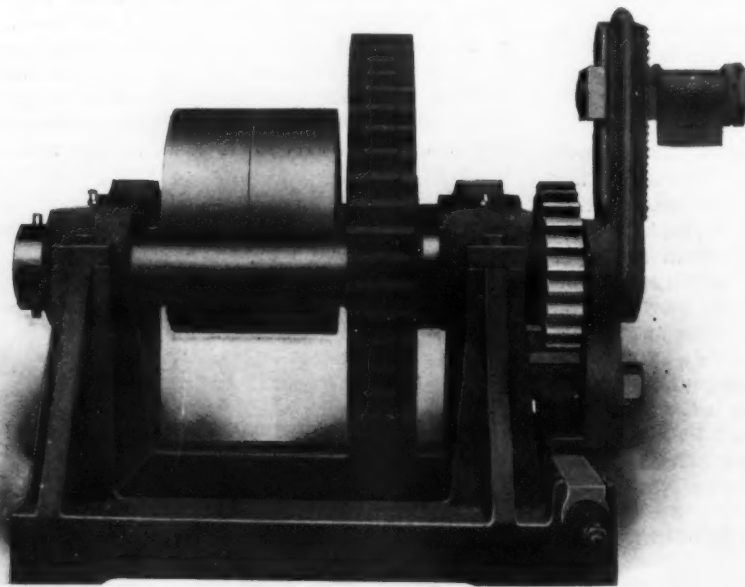


Fig. 1.—Side Elevation of the Peck Automatic Drop Lifter.

lifter, and being placed on a separate frame it is not subject to jarring by the action of the hammer.

One new feature of the improved type is the removal of the weight of all parts which formerly came upon the lifting shaft, leaving it free to revolve easily. Another improvement is the provision for removing the shaft by taking out a pin in the collar at the back end and slipping off the collar, which allows the shaft to be pulled out without disturbing any of the parts or the driving belt. By making the dog and lift cranks in one piece there is no torsional strain on the shaft, as there is when they are made as two separate cranks with the main bearing between. These new features are brought out in the accompanying Figs. 1 and 2.

The lifter is tripped, allowing the hammer to fall, by pressing a treadle, which is connected with the lock up bar, shown in the end elevation, Fig. 2. The crank is again lifted by the dog engaging with the continuously revolving ratchet, which is fixed to the sleeve carrying the main gear. The hammer stops at the top of its stroke, where it remains until again tripped. As the crank runs easily on its shaft independently of all other mechanism the drop is clean and quick.

The lifter is intended to be mounted on a frame, which in the larger sizes is best supported on the floor or in the smaller sizes may be suspended from the ceiling. It may be applied to any drop. At present there are nine sizes in which the lifter is made, ranging in capacities from 150 to 5000 pounds. The speed generally provided is about 60 strokes per minute.

The 24-hour record of No. 6 furnace of the open hearth steel plant of the Tennessee Coal, Iron & Railroad Company, Ensley, Ala., published September 28, should have been 202 and 142-1000 gross tons, instead of 202,142 tons.

### The Philadelphia Foundrymen's Association.

The regular monthly meeting of the Philadelphia Foundrymen's Association was held at the Manufacturers' Club, in that city, Wednesday evening, October 4, Thomas Devlin, president, occupying the chair.

The prices of pig iron and their possibility of advancement were discussed, as was also the condition of the foundry trade in general. Trade was said to be improving materially and many foundries were reported as running to their full capacity, with difficulty experienced by some foundrymen in getting enough molders to take care of the work offered. There is a strong tendency toward higher prices for castings, but up to this time no fixed advances have been made.

After this discussion Mr. Devlin, who has been abroad during the greater part of the summer, made a short address outlining his recent trip, giving an account of the various places of interest he had visited, noting particularly, however, that as he had made the trip for recreation only he had avoided visiting a single foundry while abroad.

The paper before the association for the evening was on "The Taylor-Newbold Cold Cutting Off Saw," by Sydney Newbold of the Tabor Mfg. Company, Philadelphia. A number of lantern slides were used in illustrating the paper. In the discussion which followed the reading of the paper it was

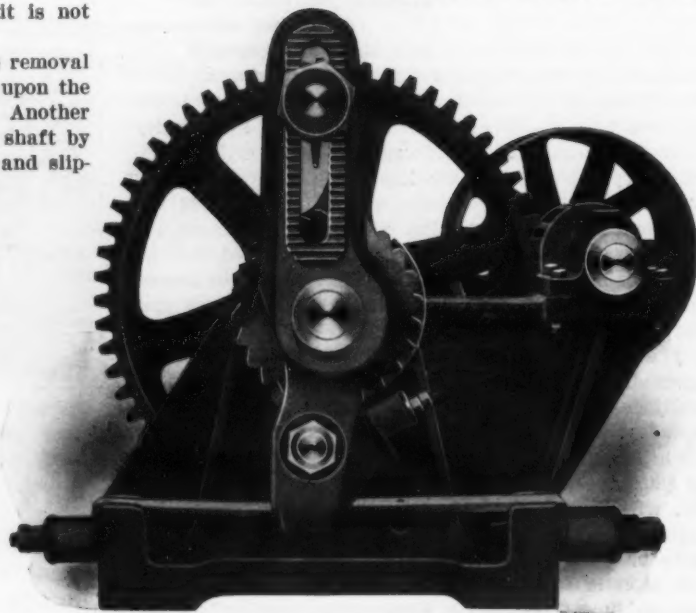


Fig. 2.—End Elevation, Showing the Tripping and Lifting Mechanism.

brought out that these saws could be attached to the older type of cold saw cutting off machines, but that there would be a limitation to the work performed when compared to that done on the modern machine designed for high speed saw blades. A very marked improvement, it was contended, was shown even with the old machines when compared with the work done with the ordinary saw blade. A vote of thanks was tendered Mr. Newbold for his interesting paper.

It was announced that at the next meeting of the association a paper on the Caldwell process for making difficult castings in iron or other metals would be read by J. W. Daniels of Philadelphia, after which the meeting adjourned.

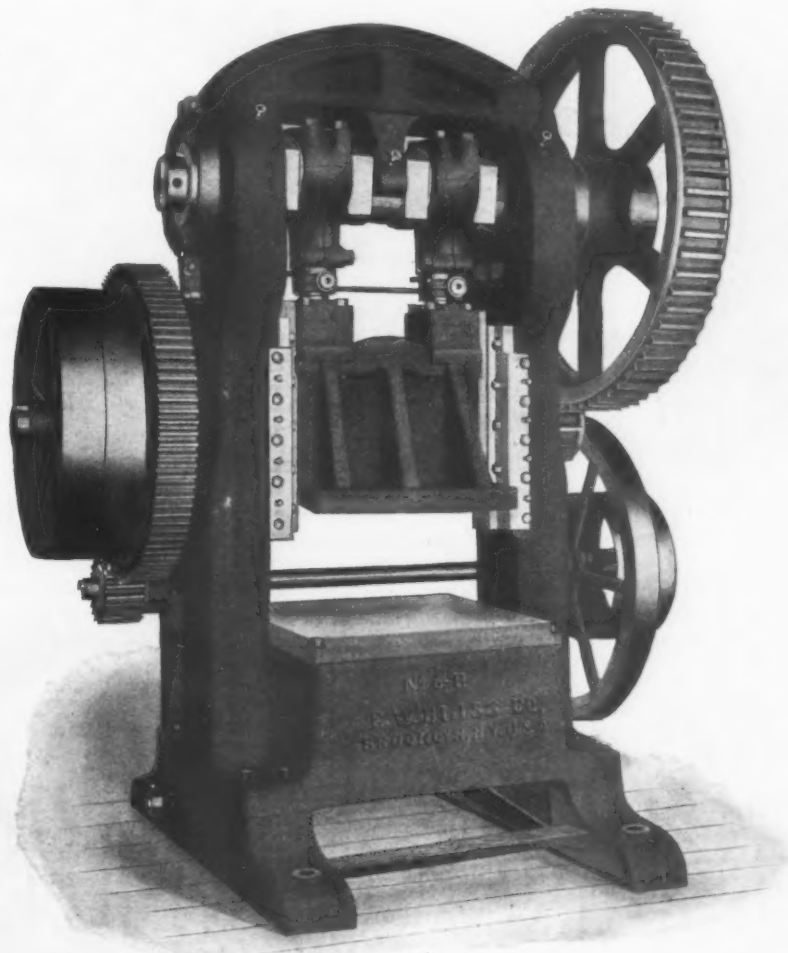
### A Bliss Special Double Crank Press.

A new pattern double crank press has recently been designed by the E. W. Bliss Company, Brooklyn, N. Y., which is particularly adapted for very heavy stamping and forming, but inasmuch as the slide is very accurately guided in long bearings the most delicate die work can also be executed. When adjusting for different heights of dies perfect alignment of the slide is maintained, the adjustment being accomplished by a ratchet device which raises or lowers both ends of the slide simultaneously.

The frame is a single massive casting. The crank shaft operating the pitmans is of high carbon hammered steel of large diameter, making it capable of withstanding the severe strains that are frequently put on a press of this character. The stroke of the slide is 6 inches.

a pressure of 57,000 volts, and the current will be carried 110 miles over two overhead bare copper wires. Where it enters the city the conductors will be placed underground in well armored cables. The current will be transformed to a lower voltage for commercial use by five motor generators. This is the first instance in which direct current of such a high pressure has been used in this manner and also the first instance in which direct current at any pressure has been transmitted to any such distance.

Electric welding has caused a complete revolution in methods of manufacture in many industries, according to a writer in the *London Times*. It makes practicable many operations impossible by the ordinary forge or blow pipe process. The operation can be closely watched



A New Double Crank Press of the E. W. Bliss Company, Brooklyn, N. Y.

To give a slow, powerful motion to the slide double gearing is employed, the total ratio of which is 23 to 1. When greater speed is required the press is driven by belting to the pulley on the intermediate shaft and the pinion on the fly wheel shaft, normally used as the driving shaft, is thrown out of mesh with the second gear. Running single geared the ratio between the crank shaft and the driving shaft is 5 to 1.

The bed of the press has an opening 31 x 24 inches. The thickness of the bolster plate is  $3\frac{1}{2}$  inches. The distance between the gibs is 35 inches and the area of the die plate is 41 x 47 inches. The press stands 134 inches high to the top of the gear on the crank shaft and weighs complete 40,000 pounds.

Two new hydraulic electric stations are to be built in Lyon, France. In one a 200-foot head in the Romanche River will afford energy for 10,000 horse-power, which will be transmitted as three-phase current over a line 90 miles long. The other plant, which will be located at Moutiers, will supply 5000 horse-power direct current at

as it proceeds and faulty results avoided. It is very rapid and extremely economical in labor, though the fuel cost is about the same as with other methods. Impurities are excluded from the joint and a perfectly homogeneous weld obtained. Tests of the comparative strengths of hand and electric welds show that the former are 89.3 and the latter 91.9 per cent. as strong as the solid material.

The Franklin Institute of Philadelphia makes an announcement of its programme of lectures for the season of 1905-1906. The winter course, to be given in January and February, 1906, includes as lecturers Dr. A. C. Perrine of New York on "Power Transmission"; Charles E. Waddell, electrical engineer, Biltmore Estate, Biltmore, North Carolina, on "Forest Denudation and its Effects"; and H. F. J. Porter of New York on a subject to be announced. On the preliminary programme of the sections appears an opening address before the mining and metallurgy section, by A. E. Outerbridge, Jr., of Philadelphia, and the following papers: "American



Thermit Practice," by Ernest Stuetz, of New York; "New Method for Silicon," by Henry Noel Potter, New York; "Some Notes on the Structure of Iron and Steel," by Dr. William Campbell, Columbia University, New York; report of the Mining and Metallurgical Exhibition at Liège, Belgium, by Dr. George B. Scholl, Philadelphia.

### The Turner Carburettor.

The need of a simple and reliable carburetting device suitable for automobile and marine engines which is capable of vaporizing common commercial gasoline has been appreciated for some time. In the endeavor to supply such a carburettor the Turner Brass Works, Chicago, has designed two types, one for use with four-cycle auto-

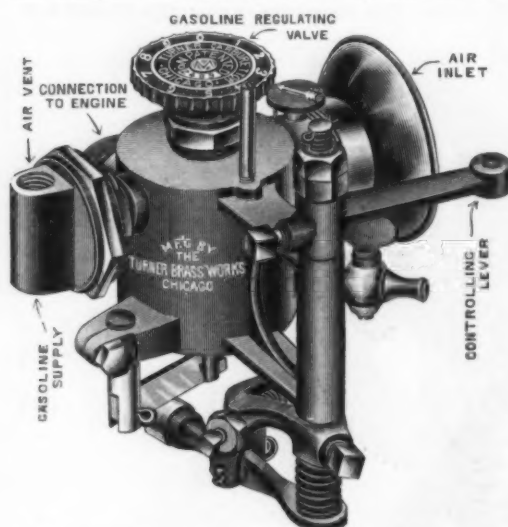


Fig. 1.—The Turner Carburettor for Four-Cycle Auto Engines.

mobile engines and one for two-cycle marine engines. The accompanying Figs. 1 and 2 show these two carburettors. They are made entirely of bronze, because iron has a tendency to corrode, interfering with the prompt action of the moving parts. The carburettor is

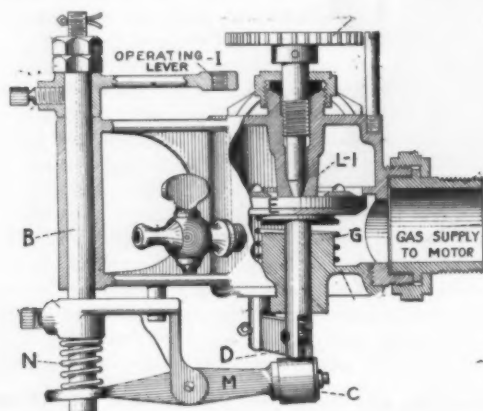


Fig. 3.—Two Sectional Views of the Auto Type of Carburettor.

of simple construction and is claimed to give a perfect mixture at all speeds and under all atmospheric conditions. It is described as a simple poppet valve carburettor and has as a distinguishing feature, an individual constant vacuum system of control. The latter is said to overcome all such difficulties as irregularities of the mixtures at different speeds of the motor and imperfect vaporization of the fuel for starting in cold weather, and to dispense with the necessity of priming, heating or using high grade gasoline. In fact, the carburettor is not well adapted to a gasoline of higher grade than 68 or 70 degrees. In cases of emergency wood alcohol may be used, and the motor will start with this fuel exactly the same as with gasoline.

Fig. 3 shows two sectional views of the auto type carburettor which indicate the principle of its operation. The poppet valve E performs the function of the float as used in the regular float feed type of carburettor for

shutting off the flow of gasoline and takes the place of the throttle and auxiliary valves used in other carburetors. In other words, this one valve performs the functions of feeding, vaporizing and controlling the mixture and the quantity of it to be delivered to the motor. The valve also affords a cut off for the gasoline supply, which is not affected by vibration when in operation and is a positive and automatic cut off when the motor is stopped.

The poppet valve E is normally held to the seat S by the light coil spring G and auxiliary spring N, com-

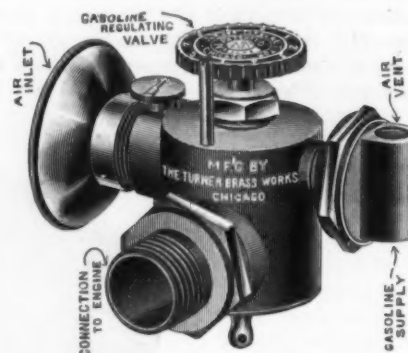
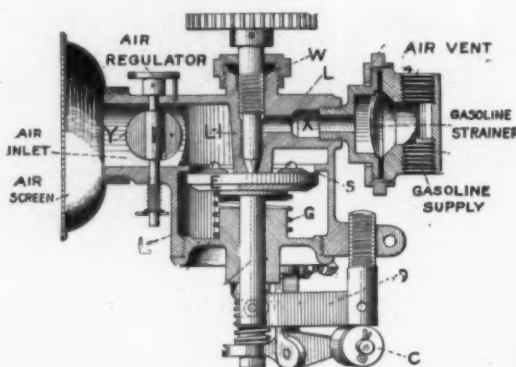


Fig. 2.—The Turner Carburettor for Two-Cycle Marine Engines.

pletely closing the air passage through the carburettor. It also seats on the end of the gasoline supply tube L-1, thereby preventing the flow of fuel except when drawn in by the suction of the motor. When it is desired to admit a full charge of air and gasoline, tension on the auxiliary spring N is removed, leaving only the tension on the light coil spring G to be overbalanced by the engine suction. Under these conditions the valve will remain open during the full suction stroke of the piston. To decrease the charge admitted the tension of the auxiliary spring N is brought into action by turning the operating lever I; this acting through the rod B causes the lever M, through the roller C, to press with increasing effect on the link D, which assists in holding the



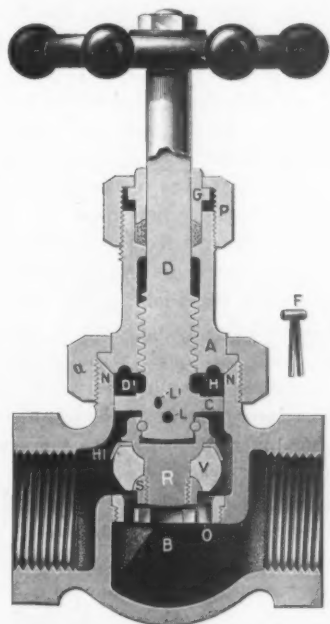
valve E closed. As a result a greater vacuum is formed before the valve opens to admit gas to the motor. In creating this vacuum a part of the stroke of the piston is spent, leaving only the remaining part to draw in the charge. The gasoline flow can be thus controlled in exact relation to the air supply and the vaporizing power increased as the size of the charge is reduced, making a positive feed of fuel certain regardless of the quantity.

One of the most valuable features of the Turner carburettor is that no change in the air or gasoline adjustments is necessary to maintain an absolutely even mixture between a full charge at any speed or the smallest charge that the motor will fire at the slowest speed. In starting the motor the poppet valve also affords a positive feed of exactly the right amount of fuel, and, due to the high vaporizing power, the motor will respond immediately to the first charge drawn through the carburettor.

### The Powell White Star Valves.

The principal innovation in the globe, angle and check valves made by the William Powell Company, Cincinnati, Ohio, is the use of a reversible and renewable valve disk made of a peculiar alloy. It is silver white in color and of great durability under high pressures, as its melting temperature is about 2000 degrees F. The valve disks have two wearing faces, so that they may be reversed after being reground several times, and when completely used up may be replaced with new disks. The valves are made either with or without renewable seats, which are made of the same white bronze as the disks. The bodies of the valves are of a special alloy, the principal element of which is lake copper. Another special feature is the union nut, by which the bonnet is attached to the body. The conical faces on the body neck and the bonnet have a tendency to expand the thread on the neck when the nut is screwed up, which increases the tightness of the joint and gives great holding power against excessive pressures.

A cross section of a globe valve of the improved type is shown herewith. The reversible disk V is attached to



Section of a White Star Valve with Removable Disk and Seat.

the swiveling holder R by the jamb nut S. The flange H 1 is a loose cover, which protects the upper, unused face of the disk from scale and corrosion while the lower face is in service. The stem D is centrally guided within the neck N of the body B by the wing guides C. At L the valve stem D is pierced to receive the lock bar F when locking the disk for regrinding. When this lock bar is not in use it is placed in the hole L 1 between the wings of the stem, and as this part never leaves the inside bearing surface of the neck it is impossible for the bar to fall out.

The bonnet A is firmly screwed down against the conical face of the body neck N by the coupling nut *a*, and the tighter this is screwed down the tighter will be the joint due to the expanding of the threaded part of the neck. For all sizes up to 2½ inches the coupling nut is hexagonal, and on larger sizes the nut is circular, with milled slots to take a spanner wrench. The wing guides C insure the perfect alignment of the stem and disk and make it possible to dispense with the bonnet when regrinding the disk. The packing surrounding the valve stem is of material to resist high temperature and is tightened by forcing down the driving gland G by screwing down the packing cap P. It will be noted that the drive gland is extra long and projects through the packing cap.

To regrind the disk when worn the bonnet A is re-

moved and the lock bar F is withdrawn from the hole L 1 and inserted in the lower hole L. This locks the carrier R from turning, but leaves it free to oscillate while grinding. Sand and water are applied to the disk and by means of the wheel handle the disk is rotated back and forth until a good seating contact is obtained. When one face is worn out, to reverse the disk the carrier R is locked by inserting a wire nail in the hole L, and by grasping the wheel handle the nut S may be removed with a small wrench or pliers. The disk is then inverted, the nut S replaced and the new face of the disk is ground slightly to fit it perfectly to the seat. The removable seat O may be replaced when worn out by inserting a flat bar wide enough to fill the opening in the seat and bear against the lugs provided for the purpose and using it to unscrew the old seat and screw in the new one.

The constructional features applying to the valve and seat of the globe valve described are common to the cross, angle, check and radiator valves manufactured by the company. The valves are made with screw ends, as illustrated, or with United States or American standard flanges. All the valves are made in two grades, the standard being suitable for pressures up to 200 pounds and the extra heavy for pressures up to 350 pounds. Both are tested to double their respective working pressures.

Franklin Williams, 39 Cortlandt street, New York City, is the Eastern representative handling the Powell valves and engineering specialties.

### Drawback Regulations for Circular Saws and Oil Drums.

WASHINGTON D. C., October 10, 1905.—The Treasury Department has prepared a series of regulations for the allowance of drawback of duty paid on imported steel plates used in the manufacture of circular saws, which embrace a novelty in the form of the allowance made for recoverable and nonrecoverable waste in the work of cutting the teeth and otherwise finishing the saws, which are of the chisel tooth type. The regulations, which have been prepared upon the application of R. Hoe & Co., New York, require the preliminary entry to show the diameter, gauge and number of teeth of each saw separately and in the aggregate. The drawback entry must show the total number of chisel tooth saws exported, the diameter, gauge, number of teeth and the net weight of each saw and the net weight of the steel plates, in condition as imported, consumed in the manufacture thereof, and in liquidation, the weights of the steel plates, in condition as imported, which may be taken as the basis for allowance of drawback, may equal the weights as declared in the drawback entry, after official verification of exported quantities, provided that in no case shall the allowance for nonrecoverable and recoverable waste for each kind of saw, after deducting the proportionate value of the recoverable waste at the current value thereof, exceed the weights shown in the schedule filed with the sworn statement.

#### Oil Drums.

Regulations have also been prepared by the Department for the allowance of drawback of duty paid on imported terne plates used in connection with domestic plates in the manufacture of 5-gallon and 10-gallon drums intended for use as containers for the exportation of petroleum. The Department some time ago, upon the application of the Standard Oil Company, prepared a regulation allowing a drawback of duty paid on imported terne plates exclusively used in the manufacture of these drums; but it has been found expedient to employ both imported and domestic plates and the regulations have therefore been extended to cover this innovation. In liquidation, the weight of terne plates as imported which may be taken as the basis for allowance of drawback may equal the weight consumed as declared in the drawback entry, after official verification of exported quantities and kinds, but in no case shall it exceed 99 per cent. of the net weight of the plates used, as ascertained on importation.

W. L. C.

## 1855—1905.

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To the end of 1894 the maximum pig iron production of Allegheny County had been 1,782,079 gross tons. In the past three years the Bessemer Railroad alone has



hauled an average of 4,000,000 gross tons of ore per year and this year will haul about one-fourth more. A single track railroad, therefore, has been able to take care of a greater tonnage than that which constituted the most important single item of prospective tonnage for the canal then proposed. Had it been possible in 1894 to foresee the outcome in this one particular only a body blow would have been given the project, and it is not unreasonable to urge that the present may have surprises of one nature or another in store.

### Engineering Schools and the Unions.

Two recent instances of the refusal of polytechnic institutes to recognize labor unions and their scales and rules are deserving of more than passing notice as indicating an attitude the reverse of which would be regarded with much dissatisfaction by those employers who must in the future draw from the graduates of these schools for their engineering corps. The Massachusetts Institute of Technology, Boston, has refused to recognize as applying to its employees the decision of an arbitrator chosen by carpenters and their employers to adjust a scale of wages for the city of Boston, and as a consequence several carpenters left the institute's employ. The Worcester Polytechnic Institute, Worcester, Mass., declined to discriminate against nonunion molders in the foundry department of its shops and its union molders walked out, to be replaced by nonunion men.

There was nothing unexpected in either of these incidents. Nothing different could possibly have been consistently done. Recognition of labor unions as conducted at the present time would seem to be impossible by institutions of this character. This does not necessarily mean discrimination against workmen because they are members of unions. Many employers who operate on the open shop system do not care how many of their men carry union cards in their pockets provided that the unions do not attempt to take the management of the works from the hands of the owners. It would be preposterous for a labor union to be given a power in any engineering school against which the corporation, the president and his faculty and the head of the department in which the workmen are employed would be powerless to assert themselves. The young men of these institutions of learning are strongly influenced by their environments. Instructors are selected with this knowledge in mind, as men whom the student can look up to as worthy of full respect and emulation. There would be a sad lack of stimulating example if the journeymen employed in shops or laboratories—and there must always be some of these—were permitted to hold themselves masters over all the heads of the institution.

### Copper Prices and the Brass Foundries.

The brass and composition metal foundries are complaining that the high prices of their raw materials, especially copper, but also tin and zinc, are having a depressing effect upon their business. They do not find things really dull, for there are many purposes for which no cheaper substitute can replace their product, and with business so good everywhere among manufacturers there must be a good demand for all sorts of castings. Where they are needed the matter of price cannot be permitted to interfere; but when the price of brass goes up 4 or 5 cents a pound, say from 18 to 23 cents, to use a recent actual instance, then the customer of the foundry very naturally thinks deeply on the subject of a cheaper substitute. He may have to decide that nothing

else will meet requirements, but there are plenty of cases in which iron or steel will do, and he may take the chance, although actual results will not be quite so satisfactory. Tests are usually made to decide the question with some degree of certainty. The use of steel may prove an unexpected source of economy, and the manufacturer may wonder that he never thought of it before. If the substitute be quite as satisfactory as brass or other composition metal, the brass founder finds that his old customer does not come back to him when business conditions change and copper and tin and zinc go back to low prices. Of course such substitution is not in every respect a disadvantage. The founder's customer has profited by the high prices of brass in learning a way of saving money in good times and bad, although the brass founder has suffered a permanent loss. One foundryman points to the loss of an order for some thousands of pieces because of the substitution of steel for brass. On the other hand, it should be remembered that the use of composition metals is constantly increasing because of characteristics which are indispensable under many conditions and which are not possessed by iron or steel. As a general proposition, however, any condition which teaches the manufacturer how to save money without cheapening the quality of his product has served the general good.

### The Utilization of Waste Products.

The conversion of waste products into profits, which has been notably successful in many lines of manufacture, is constantly receiving more and more attention from iron and steel producers in this country. While great strides have been made in the past, large possibilities still appear. The utilization of waste products from blast furnace operations is only beginning to receive attention, and while the losses in finishing mills are not nearly so great as in the production of iron, they are considerable, and efforts at reclamation have resulted in profits of no mean proportions.

Sulphate of iron as a water purifying agent with an admixture of a small percentage of copper sulphate is of comparatively recent use in mechanical filtration, and its merit as a coagulant together with its low cost has led to its employment in urban plants in all sections of the country as a substitute for aluminum sulphate. A new outlet has thus been developed for a waste product whose uses have heretofore been circumscribed, and the disposition of which at all large finishing mills where steel is pickled to remove the scale, before being drawn or rolled into a more highly finished product, has been a problem. As compared with alum, the cost of purification by copper sulphate has been reduced by 40 to 75 per cent. One of the early tests showed that the chemical cost per 1,000,000 gallons with alum averaged \$3.16 and with iron sulphate \$1.97 per 1,000,000 gallons filtered. The average amount of alum used was 2½ grains and of iron sulphate 2 grains per gallon filtered. The average amount removed with alum was 91.81 per cent and with iron sulphate 89.80 per cent. The cost of iron sulphate is \$9 per ton, f.o.b. Cleveland, and the possibilities of the trade are suggested by the requirements of one of the largest municipal filtration plants, where 3500 tons are used annually.

More attention is also being paid to the use of blast furnace flue dust, despite the many unsuccessful attempts at briquetting. Recent developments indicate that the latter has been given up as impracticable, and attention is now directed toward the agglomeration of the dust in rotary kilns. Nodules have recently been made con-

taining 66 per cent. of iron, and it has been shown that their physical structure is such as to prevent disintegration in the stack before the zone of fusion is reached. One of the largest producers of steel in the West and another in the East have already contracted for plants of the rotary kiln type. The outcome of these experiments is expected to be not only the agglomeration of flue dust, but also of the fine Mesaba range ores, which have been a constant source of annoyance and loss in the practice of most blast furnace companies, even though some few have made surprising records in operating on high percentages of Eastern concentrates.

### Tin Plates to Be Made in Canada.

TORONTO October 9, 1905.—Good progress has been made with the construction of the Canadian Tin Plate & Stamped Steel Company's works at Morrisburg, Ont., and it will scarcely be the company's fault if the plant is not ready for operating within the time specified in the agreement with the town. The general terms of that agreement were given several months ago in *The Iron Age*. In that agreement the town undertook to supply the electricity the company proposed to use. The quantity called for was 700 horse-power. This undertaking committed the municipality to a larger liability than the Town Council could bind upon it without the sanction of the ratepayers. Accordingly a by-law embodying the agreement was submitted to the ratepayers at the polls in April last and was carried by a large majority. The arrangement was extremely popular.

#### A Hitch in the Power Arrangements.

To carry out its part of the contract Morrisburg had to obtain a concession from the Dominion Government. The town stands at the lower end of the canal by which the uppermost of the St. Lawrence rapids is passed. That canal was to be the source of the power the town would supply to the company. As the canals are Dominion Government works, no use can be made of them for power purposes unless by arrangement with the Department of Railways and Canals. Before submitting the agreement to the ratepayers the Town Council applied at Ottawa for a lease of the power required. An order in Council was passed authorizing such a lease to be given, but so far no lease has been obtained. The failure to get it in the six months that have passed has brought about something of a crisis. A week ago the Reeve of Morrisburg resigned his office, the chief reason alleged being his dissatisfaction with the handling of this business. As the presiding member of the Town Council he had taken an active part in the negotiations with the company. Though he had favored the enterprise from the outset he was unable to agree with his colleagues as to the procedure. He held that the by-law ought not to have been presented to the ratepayers until the matter of obtaining a lease from the Government was put beyond all doubt. Until certainty was reached on that point it would, he maintained, be risky for the town to engage to furnish the company with the stipulated electric power. After the by-law was passed and the agreement was fastened on the town the Council had plans for an electric power house prepared at a cost of \$1500. Then it stopped, alarmed by threats of injunctions on the part of persons opposed to the agreement. To have brought the matter so far forward and then to have stopped short pending the action of the Government appeared to the Reeve unbusinesslike and he resigned. Until his successor is elected the town's part in the performance of the agreement will probably be that of marking time. It is expected, however, that the election will soon be held. It will then be seen whether the Council has recovered from its fright and is prepared to proceed along the line upon which it started under the assumption that the lease would be duly granted in accordance with the order in Council. The local newspaper, which is most friendly to the enterprise, advises the Council to push on the construction of the power house or drop the scheme forever.

So much for the power plant on which the company depended. The power house, which ought to have been far advanced toward completion by this date, has not yet been begun. On its part the company has been active. It has gone on with the construction of its mills, as agreed, and it bids fair to have these finished long before there will be power furnished by the town.

#### Attitude of the Dominion Government.

Consideration of certain of the foregoing facts might give rise to the presumption that the Dominion Government is not greatly concerned for the fate of the project. The truth is the Government's failure to give the lease appears to be partly the Town Council's fault. Already the town is a leaseholder of rights to obtain power from the canal, the power in question being used for the production of electric light for the municipality. It appears to have been decided to have this lease canceled and have it merged with that for the supplying of power to the company. It seems, however, that the authority of the Council to make such a substitution without reference again to the ratepayers is doubted. Further, it is questioned that the total requirements for lighting the town and operating the works would be provided for by a lease granting the 1000 horse-power for whose engagement for the two purposes the ratepayers have given their assent. At present the town needs for lighting purposes all the power its lease calls for. When the town finally decides what it really wants the Government to do the new lease will doubtless be issued.

It is generally understood that the project has the Government's good will, and there is an expectation that the revised Tariff, on which Mr. Fielding's commission is now at work, will contain provisions for the encouragement of the tin plate industry in Canada. The men who have gone into the Tin Plate & Stamped Steel Company would hardly have done so had they not had reason to expect the industry to be more or less protected from outside competition. A protective duty on tin plate alone, however, could scarcely be the only change. There would doubtless be a duty on steel billets so as to turn the demand of the tin plate mills as much as possible to the advantage of the Canadian manufacturers of steel. After adjusting to this change and to the protection requirements the duty on tin plate the Government would almost necessarily have to make corresponding additions to the duty on stamped ware, tinware, &c. If it is a fact, as has been stated, that there are both Canadian steel making interests and Canadian tinware interests connected with the Morrisburg undertaking, it must be expected that this series of changes in the duties will be made.

C. A. C. J.

Plans for the Milwaukee School of Trades have advanced so far that there is no doubt that it will open before long and become one of the factors in Milwaukee for the education of young men in the various trades. The Merchants' and Manufacturers' Association has in charge the preliminary arrangements, and it is announced that one of the buildings of the old Pawling & Harnischfeger plant, at the corner of Oregon and Clinton streets, will be leased and steps taken at once to put it in shape for occupancy. Instructors will be engaged and instruction given in wood working, geometry, algebra, arithmetic and higher mathematics. It is the intention of the committee in charge to have two main divisions of the school, one for beginners in the different trades and the other for skilled mechanics. Day classes will be held at the school, and if there is a sufficient demand for night classes they will be formed later in the season. It is planned to have the school opened by November 1.

The Schwartz melting and refining furnace, manufactured by the Hawley Down Draft Furnace Company, Chicago, is being used by the Otis Elevator Company in its foundry at Sixteenth and Laflin streets, Chicago, for the production of steel by a new process lately invented by E. H. Schwartz of that city, who is also the inventor of the Schwartz furnace. A 90-inch furnace is used and the steel made is of 0.32 carbon. In two hours and fifteen minutes a heat of 6500 pounds was turned out.



## The Bituminous Coal Market.

BY FREDERICK E. SAWARD.

The consumer of coal for industrial purposes is more interested in the soft coal situation than in that of hard coal or anthracite. Stated concisely the market for bituminous coal is in a decidedly more active condition than it has been in several months. The producer now has the making of prices in his hands, rather than the consumer. The tidewater bituminous situation is satisfactory to all parties, the tonnage is heavy, it moves off promptly and prices are at a point showing operators a profit, while consumers still have a low basis of cost. For New York loading ports, South Amboy coal is possibly in best demand, very little unsold coal arriving and the car supply being such that shippers are buying more or less to complete cargoes with dispatch. Prices at that port rule at \$2.50 to \$2.75 per gross ton for Clearfield and Cambria County coals of ordinary grades. Port Reading coal comes next, with Beech Creek grade offering at about \$2.50, Somerset at \$2.45 to \$2.50 and West Virginia steam coal at about \$2.35. Very little surplus coal is heard of at New York ports, and sales are readily made when needed on about this basis. The New England market is coming forward with orders for Pennsylvania coals to take the place of Pocahontas, New River and Georges Creek, on account of the poor dispatch of those grades. Vessels have been delayed in some cases 10 to 15 days in loading at the lower ports, showing demurrage charges before getting the cargo loaded, leaving no time for discharging at destination.

### The Shortage of Cars Worse Than Ever Before.

Now from every quarter comes the cry of a short supply of cars for the movement of coal. A shortage always occurs in the fall and winter months, and this season appears to be only worse than ever before because there is more to do on all the various lines of transportation; more grain and more merchandise of all kinds are to be moved, and coal is wanted in greater quantity as the years go by, so that there is a greater necessity for cars, and in spite of all the efforts of the carriers there is not a sufficient number thereof. During the dull period of the summer coal was cheap; but very few people want anything when it is cheap, no matter whether it be coal or anything else, and there were few that were picking up the bargains. Now that there is a general move upward, as is not unusual at this time of the year, there is a rush for supplies before the market runs away from them. One interest competing with another to buy they all play very nicely into the hand of the coal seller, thus reversing the situation of a few months back.

The main fact, which stands out in all the reports, is that there is a strong demand for fuel, and the change is so sudden from a paucity of orders to too many for ease and comfort that the producer is not happy, even under the condition of a better price and plenty of orders. It is impossible to get the general coal trade of the country on the basis of an even quantity produced and shipped each month, though the anthracite people have done pretty well in that direction, through the system of discounts, and perhaps something along the line of discounts could be adjusted on soft coal if the producers can get to a point where there is unity of thought and action in this portion of the fuel industry. As it is at present, there is the probability of some round prices being obtained for soft coal by the producer during the next six months, and this will help up the average for the year. The Western market, which was the last to come up into line in the way of better things pricewise, is now likely to develop into a runaway market for the next few weeks.

### Prices Getting on a Profitable Basis.

The consumer is awake to the situation and is trying hard to get in on the ground floor before it is too late, but he has had it all to say for some months and will now have to pay a live and let live price for what he gets. The jubilant feeling of the dealers is due to the fact that there is a little profit in their business, and they can see a time close at hand when there will be a

little more profit. They have done business at cost so long that the new state of the market is like a man getting out from under a great rock that has fallen on him. So they are refusing to sell coal for future delivery, and some of them are withholding all quotations. Some even are calling in their salesmen here and there, feeling that coal is worth more than its present price.

The operators supplying the tidewater market claim that sales have been made at \$1.25 per gross ton at the mine, and there is a general belief that in the near future this will represent the price generally obtainable. At this writing, however, the range average is from \$1.05 to \$1.15 at the mines in Pennsylvania, while the Georges Creek coal is quoted at \$1.60 to \$1.70, with West Virginia \$1.15 and Somerset \$1.25 at mines. It is doubtful if a ton of coal could be had for \$1, while not so long ago \$1 coal would have attracted attention. The demand has increased with the better prices. Line bituminous rates are as follows for prompt delivery:

#### Pennsylvania Railroad Coals.

	Per gross ton.
Georges Creek.....	\$1.60 to \$1.70
Best Miller vein.....	1.25 to 1.40
Good Miller and Moshannon.....	1.05 to 1.15
Best gas coal, $\frac{3}{4}$ lump.....	1.15 to 1.35
Best gas coal, run of mine.....	1.00 to 1.15
Best gas coal, slack.....	.70 to .80
Ordinary Clearfield.....	1.00 to 1.15
Ordinary Latrobe.....	1.00 to 1.10

#### Baltimore & Ohio Railroad Coals.

	Per gross ton.
Georges Creek.....	\$1.60 to \$1.70
Best Somerset.....	1.15 to 1.25
Somerset.....	1.00 to 1.10
West Virginia Freeport.....	1.00 to 1.10
Fairmont district, $\frac{3}{4}$ lump.....	1.00 to 1.15
Fairmont district, run of mine.....	.90 to 1.00
Fairmont district, slack.....	.70 to .80

#### New England Better Supplied.

A feature of interest to the whole New England district is the growth of the Philadelphia & Reading Railroad in soft coal carrying. A few years back the tonnage carried to tidewater was a mere bagatelle, but to-day, through the great energy displayed by the officials of that road, the tonnage delivered to New York Harbor and Philadelphia is enormous. Drawing as it does from the New York Central, the Buffalo, Rochester & Pittsburgh, the Baltimore & Ohio and the West Virginia Central for tide delivery, it enters practically every Eastern bituminous field and draws for tidewater from all the chief railroads in Pennsylvania with the sole exception of the Pennsylvania Railroad. A few years back one small pier at Port Reading was sufficient to handle all the hard and soft coal coming in, but a second was built not long since twice as large, equipped only on one side with dumping facilities. Last winter found its capacity overreached, and dredging was done and tracks laid on the upper side of the large pier, thus doubling its dumping capacity to 200 cars per day. But again was it found insufficient to meet the demands, and during the summer a new and much larger pier than either of the present ones was started directly to the north. Work is being hurried with the hope of having it completed by early winter, when shipping ports are usually taxed the greatest. It is expected that this pier will dump as much coal as the two older ones together.

Another line that is going to be of great help and service to New England is the New York, Ontario & Western Railroad by its Poughkeepsie Bridge connection with the New York, New Haven & Hartford. The Ontario & Western is to play a much more prominent part in the coal situation in New England than has heretofore been believed. Its coal traffic capacity is to be increased as rapidly as possible, so that when the New Haven gets ready to assume control of the coal situation and practically to fix the price at which coal shall be sold in New England, it will have the instrument at hand. It will require the expenditure of a good amount in improvements, and that is provided for.

Strike or no strike, there is plenty of coal wanted, and nothing is to be left to chance. The project of a combination of operators to fight the union does not seem likely. John H. Jones, president of the Pittsburgh-Buf-



falo Company, has followed the lead of President Robbins of the Pittsburgh Coal Company in declining the invitation to attend the national conference of operators to be held in Chicago in November. He indorses Mr. Robbins' sentiments in the matter and states that while he is in favor of a renewal of the existing interstate agreement affecting operations in the Pittsburgh district and in Ohio, Indiana and Illinois, he does not understand how the forthcoming conference will be instrumental in reaching a satisfactory solution of the problems with which the operators and miners will be confronted next spring when the present contracts expire.

Some late figures of the various soft coal carriers show the progress this year as against last year:

Soft Coal Carried to October 1.		
Railroads.	1905.	1904.
	Gross tons.	Gross tons.
Beech Creek.....	6,046,080	4,841,927
Pennsylvania.....	21,056,370	19,466,859
Broad Top.....	483,701	432,746
Baltimore & Ohio.....	3,812,836	3,862,686
Chesapeake & Ohio.....	4,654,729	3,953,256
Norfolk & Western.....	1,764,435	1,486,522
Coke Carried to October 1.		
Beech Creek.....	61,758	18,255
Baltimore & Ohio.....	768,221	461,963
Pennsylvania.....	7,962,901	6,137,460

### The Automobile Dust Nuisance.

The dust produced by automobiles causes much discomfort to those who are in range of the moving machines. It constitutes a nuisance which calls for abatement. Two methods of tackling the problem are pointed out. One is to treat the roads or to construct them in some way so that they no longer give rise to dust. The other is to alter the construction of the car so that dust, if it exists, will not be raised to a serious extent. On these points *Nature* says:

Although a permanently good road may be made by the use of certain materials and dusty roads may be cured temporarily by various means, yet such measures can be taken only over a small proportion of our roads owing to the cost. In towns and large villages the roads might be suitably treated, but the average motorist seeks the country, and the greater part of the routes which he wishes to traverse will not pay for any special treatment. It therefore becomes very important to modify the design of cars so that the dust raised may be reduced to a minimum and also if possible to find some simple means of checking the dust in the case of cars already in use.

One of the simplest defects to remedy is the direction of the exhaust, which is sometimes pointed downward. In such a case the dust raised by the exhaust alone may be considerable and an improvement may be made very simply. It has even been proposed to use the exhaust, suitably directed, for laying the dust which is otherwise raised by the car, and M. Baudry de Saunier, editor of *La Vie Automobile*, vouches for the efficiency of the Fougère system, as it is called. The exhaust is discharged from a horizontal pipe taken across the back of the car, having a line of holes along its length. Thus a number of jets in the same plane is formed and the pipe is so mounted that the angle at which these jets impinge on the roadway may be varied so as to be as effective as possible. Naturally the less fluctuating the stream of exhaust gases the better for such a purpose, and the result is said to have been much more satisfactory on a four-cylinder than on a single cylinder car.

Speaking generally and leaving such special points as direction of exhaust out of account, it may be said that the dust is raised by the tires and is then scattered by the air currents produced by the body. In other words, if the body were moved along the road at its normal height, supported by other means than the wheels, very little dust would result. But it is equally true that if the wheels could be run without the body there would not be much cause for complaint as to dust. By body is here meant the whole structure apart from the wheels, so that the term is more comprehensive than usual. The passage of a car body through the air necessarily creates a great deal of disturbance, and the extent to which

the air near the ground is disturbed must depend to a great extent upon the shape of the body. The less the disturbance the less will the dust be formed into a cloud.

In 1903 the Automobile Club tested the dust raising qualities of a large number of cars. Each car was run at 20 miles an hour over a patch of flour on the cycle track at the Crystal Palace. The flour was kept at a definite thickness and as each car passed it was photographed. These photographs gave a permanent record of the dust cloud raised by each car, enabling the committee to classify the cars in the order of merit. The records so obtained gave a great deal of useful information, and it was recognized that this method of testing was far more satisfactory than optical observation, because an observer has a good deal of difficulty in retaining a mental picture of what may be termed a standard car as regards dust. In a paper based on these experiments, read before the club, the following conclusions were reached: Hard tires are better than soft; narrow tires are better than broad; neither have a preponderating influence; flaring mud guards are probably bad, especially if they come low down; cars which are low underneath are worse than cars a long way off the ground; but smoothness of bottom shape and absence of forward coning are infinitely more important. There is strong evidence that it is desirable that the car should slope upward toward the back. These experiments were undoubtedly sufficient to justify further work along the lines, and if the automobile makers do not take advantage of them it will be their own fault if the machines lose popularity with those who do not own them.

### The American Shipbuilding Company.

President James C. Wallace of the American Shipbuilding Company, at the annual meeting held in Jersey City October 4, pointed out that the company has now under contract 21 steamers for delivery in the spring. He also spoke very hopefully regarding the outlook. Mr. Wallace further said: "The company has built 20 ships during the last fiscal year, with a total tonnage of 164,400." He added: "Owing to the increased size of lake vessels it was deemed advisable to rebuild the South Chicago plant. This is now being done as rapidly as possible, and it is hoped to have it completed in 30 days. The Lorain plant will also be doubled in its capacity, and a new dry dock built which will accommodate the largest lake vessels."

The income account for the year ending June 30 submitted at the meeting shows:

	1905.	1904.
Net earnings.....	\$1,549,450	\$1,028,175
Charges:		
Depreciation and maintenance.....	315,408	209,718
Rebuilding.....	40,692	78,330
Total charges.....	356,100	\$288,048
Available for dividends.....	1,193,350	740,127
Dividends, preferred.....	553,000	553,000
Dividends, common.....		76,000
Total dividends.....	\$553,000	\$629,000
Surplus.....	\$640,350	\$111,127
Previous surplus.....	3,678,442	3,567,315
Total surplus.....	\$4,318,792	\$3,678,442

The retiring Board of Directors was re-elected, with the exception that Edward Smith was elected in the place of Luther Allen, deceased.

The board met for organization and elected William L. Brown chairman of the board; James C. Wallace, president; Russell C. Wetmore, vice-president, and Ora J. Fish, secretary. The following Executive Committee was also elected: William L. Brown, James C. Wallace, Robert L. Ireland, Russell C. Wetmore, Edward Smith, L. M. Bowers and Alexander McVittie.

Continued prosperity in the United States is having a marked effect on immigration. For the year ending June 30, 1905, the total was 1,027,421—the first year in which a full million was exceeded. Immigration for September, according to the Ellis Island figures, exceeded all September records, amounting to 90,772. In September, 1904, the number was 82,708. There has been a steady increase since 1899, when the figures were 21,615 for that month.

## PERSONAL.

J. B. Bartholomew has been elected president of the Avery Mfg. Company, Peoria, Ill., to fill the vacancy caused by the death of Cyrus M. Avery. H. C. Roberts, sales manager of the company, succeeds Mr. Bartholomew as vice-president.

Geo. G. Blackwell, chairman of Geo. G. Blackwell, Sons & Co., Ltd., Liverpool, England, is due to arrive in New York October 14 for the purpose of visiting American iron and steel centers. His address in New York will be Hotel Manhattan.

Noah W. Gray has resigned as manager of the Carp furnace of the Cleveland-Cliffs Iron Company, at Marquette, Mich., to give all his time to the Boyne City Charcoal Iron Company, of which he is secretary and treasurer. The latter company built at Boyne City, Mich., the Pine Lake charcoal furnace, using in part equipment from the abandoned Martel furnace at St. Ignace, Mich.

O. A. Stranahan has been appointed sales manager and M. C. Miller assistant sales manager of the Allis-Chalmers Company, Milwaukee, Wis.

Charles E. Miller, who has been engineer of the Diamond Rubber Company, Akron, Ohio, has become superintendent of the rubber machinery department of the Aiton Machine Company of New York, having shops in Harrison, N. J.

The American Sheet & Tin Plate Company, C. W. Bray, first vice-president, Frick Building, Pittsburgh, announces the following changes dating from October 1: G. C. Kimball has been appointed chief engineer, succeeding Sumner B. Ely, resigned; James Peat has been made assistant chief engineer.

Henry C. Frick has agreed to give the University of Wooster, at Wooster, Ohio, \$40,000 for the erection of a new building.

W. B. Cogswell of the Semet-Solvay Company sails for home this week.

The North Penn Iron Company, North Penn Junction, Philadelphia, announces that A. Hardoncourt, Jr., is no longer associated with that company.

Arthur Simonson, superintendent of the foundries of William Wharton, Jr., & Co., Inc., Philadelphia, Pa., returned September 30 from an extended trip abroad.

At a meeting of the Board of Directors of the American Steel Foundries, October 8, the following officers were elected: Chairman, Charles Miller; president, William V. Kelley; first vice-president, Robert T. Lamont; second vice-president, William D. Sargent; third vice-president, George E. Scott, and secretary and treasurer, F. S. Patterson.

President E. T. Jeffery of the Denver & Rio Grande Railroad Company has been elected a director of the Colorado Fuel & Iron Company.

Harry Kennedy, formerly superintendent of the Wharton furnaces, Wharton, N. J., has been appointed superintendent of the new blast furnace which will be erected at South Chicago by the company in which Pickands, Brown & Co., Chicago, are interested.

Charles A. Moore, president of Manning, Maxwell & Moore, New York, returned last week from an extended trip through Europe.

R. C. McKinney, president of the Niles-Bement-Pond Company, New York, sailed for Europe last week. Mr. McKinney expects to remain abroad until the first of the coming year.

Edwin H. S. Fuller, an assistant foreman in the foundry of the Westinghouse Electric & Mfg. Company, in Allegheny, Pa., has been appointed assistant instructor in the foundry of the school of apprentices and journeymen in the Carnegie Technical schools in Pittsburgh.

David Tod has resigned as manager of the cement plant of the Struthers Furnace Company, Struthers, Ohio. He will probably organize a company for the building of another cement plant in the Youngstown, Ohio, district.

## OBITUARY.

F. H. MILLER.

Frank H. Miller, very prominently connected with the iron trade for many years, died at Columbus, Ohio, October 5, aged 61 years. He was born at Jackson, Ohio, and in 1866 married the daughter of James David Clare, a pioneer pig iron manufacturer of southern Ohio, owning Madison and Bloom furnaces. Immediately after his marriage Mr. Miller was made storekeeper at Madison Furnace, afterward becoming bookkeeper and later manager. He also became manager of the Bloom Furnace. Some time afterward he became associated with the firm of Churchill, Thomas & Fuller, pig iron merchants of Columbus, Ohio, and later with Chamberlain, Turney & Baird in the same business and also at Columbus. In 1893 he began trading in iron on his own account and in 1895 established the firm of Miller, Wagoner, Fieser & Co. and continued at the head of this firm until 1900. In that year he built the plant of the Columbus Iron & Steel Company at South Columbus and was its vice-president and general manager until ill health compelled him to relinquish his activities in this line. In 1903 he organized the Southern Ohio Portland Cement Company, of which he was president and treasurer at his death. He was a vice-president of the Columbus Board of Trade, a Knight Templar and a veteran of the Civil War, having served four years in the army. He is survived by a widow and four children.

## NOTES.

EDWARD LOUIS BARTLETT of the firm of Bartlett, Haywood & Co., founders and machinists, Baltimore Md., died September 29, after an operation for appendicitis, aged 59 years. He was a native of Baltimore and his father had been a member of the same firm. Mr. Bartlett was a director in the Western National Bank and a director and member of the Executive committees of the United Railways & Electric Company and the Continental Trust Company. He belonged to a number of clubs. He is survived by a widow, two sons and three daughters.

JOHN VEITH, for many years general mining superintendent of the Philadelphia & Reading Coal & Iron Company, died October 8, at Pottsville, Pa., from a stroke of paralysis, aged 70 years.

DWIGHT CUSHMAN, formerly a manufacturer of turbine water wheels at Hartford, Conn., died in that city September 29, aged 83 years. He was a native of Worcester, Mass., and in early life was a carriage maker. In 1859 he went to Hartford, where he carried on the turbine water wheel business until a few years ago, when his shop was burned. He was a brother of Austin F. Cushman of the Cushman Chuck Company, Hartford.

TIMOTHY F. TAFT, an inventor, died at Worcester, Mass., October 1, aged 97 years. Among his inventions were machines for heading bolts, an antifriction process for rolling leather sheets and an automatic machine for making loom chain fasteners.

A statement is published in London, apparently on authority, that while negotiations are under way for additions to the Russian navy, it is not expected that orders will be placed for three months. Financial arrangements are naturally an important factor. It is estimated that about \$250,000,000 will be spent, this sum including the equipment of battle ships and all other vessels. Every important shipbuilding company able to undertake naval construction work is represented at St. Petersburg.

The drop forging people are rushed beyond their capacity. Orders have poured in. Recently established drop forge shops are profiting by these conditions, for they are given the chance to make a start on the overflow from the older established plants as well as from new business obtained in the process of soliciting orders. The automobile manufacturers will be larger customers than ever this season, but drop forgings are being used for many new purposes each year. The miscellaneous demand is something extraordinary.



## Pig Iron Production Increasing.

**September Output About 55,000 Tons More Than That of August.**

### An Explanation.

For years all the producers of anthracite and coke pig iron in the United States have furnished to *The Iron Age* exact statistics of their productions each month. The only two exceptions were Leasport, a little pot in the Schuylkill Valley which makes about 1200 tons per month, and Sarah, in southern Ohio, which produces about 3500 tons per month. The absence of returns from two concerns making 4700 tons in a total product which has at times gone close to 1,900,000 tons in one month is certainly negligible.

In August a group of iron makers with furnaces in western Pennsylvania, Ohio and western New York reached the conclusion that the publication of statistics is not advantageous to them and the majority declined to further furnish them. So far as we can learn they objected particularly to the publication of statistics of stocks, since the figures were seized by sensational journals to distort the facts relating to the iron trade. In this another very important group of Eastern iron makers joined. But while some of the members of the former group extended their veto to furnishing the figures of production also, the latter decided to continue to send to *The Iron Age* the statistics of their make.

Since it is utterly impossible to estimate the fluctuations in the stock on hand of producers of iron, and since a partial report of stocks may be very misleading, we have decided to abstain from printing any estimate of the amount of iron carried by the merchant furnaces in the United States, to which we have always confined these returns of stocks.

It is a different matter with an estimate of the output of the furnaces and of the active capacity. The fact that a furnace is in operation or is idle is readily ascertained and its product under ordinary circumstances does not vary within wide limits. A very close approximation is therefore possible, based upon many years' experience and upon full past records.

We need only add that all the steel companies in the Shenango, Mahoning, Cleveland and Buffalo districts send us their exact returns and that the majority of the merchant furnaces have reported to us. In fact, 16 furnaces, whose total product in August, the latest month for their full report to us, was 106,455 tons, are the only ones whose figures for September are not at hand.

With 25 years' experience in this statistical work we are convinced that an estimate of their production will be within 5000 tons of the correct figure. The absence of the exact returns of this group, relatively unimportant from a statistical point of view, does not therefore affect the figures in their broad results.

### Active Capacity Growing.

The figures below indicate that the heavy demands upon steel works are being responded to by an increase in the pig iron output of the steel companies, while among merchant furnaces the stacks blown out or working badly in September offset in capacity those starting up. The active merchant furnace capacity on October 1, however, indicates that production, apart from steel companies, is also increasing now. The estimate of 445,468 tons per week total active capacity on October 1 is compared with 412,563 tons on September 1. For a series of months the active coke and anthracite capacity fluctuated as follows in gross tons:

Capacity per week.	Capacity per week.
October 1, 1905.....445,468	October 1.....353,142
September 1.....412,563	September 1.....360,197
August 1.....410,088	August 1.....353,681
July 1.....408,617	July 1.....384,823
June 1.....443,092	June 1.....388,178
May 1.....452,031	May 1.....373,496
April 1.....439,564	April 1.....386,215
March 1.....403,157	March 1.....347,424

February 1.....405,792	February 1.....335,330
January 1, 1905.....377,879	January 1, 1903.....346,073
December 1, 1904.....357,846	December 1, 1902.....336,617
November 1.....334,249	November 1.....330,110
October 1.....319,249	October 1.....337,837
September 1.....291,573	September 1.....328,243
August 1.....246,092	August 1.....328,745
July 1.....272,301	July 1.....303,793
June 1.....336,197	June 1.....337,492
May 1.....368,244	May 1.....337,627
April 1.....337,257	April 1.....331,140
March 1.....308,751	March 1.....316,039
February 1.....273,692	February 1.....325,440
January 1, 1904.....185,636	January 1, 1902.....291,992
December 1, 1903.....244,156	
November 1.....273,715	

### Coke and Anthracite Furnaces in Blast.

Location of furnaces.	Total Number of stacks.	October 1. Number in blast.	October 1. Capacity per week.	September 1. Number in blast.	September 1. Capacity per week.
New York:					
Buffalo.....11	10	21,499	11	20,195	
Other New York...11	2	1,798	3	2,775	
New Jersey.....8	6	5,403	6	5,815	
Spiegel.....2	1	204	1	189	
Pennsylvania:					
Lehigh Valley....27	16	10,614	15	9,591	
Speigel.....2	2	363	2	401	
Schuylkill Valley...13	8	9,193	7	8,050	
Lower Susquehanna.10	6	8,405	6	7,656	
Lebanon Valley....12	11	8,394	11	8,570	
Pittsburgh district.39	36	104,485	36	100,915	
Spiegel.....3	3	3,296	3	2,500	
Shenango Valley...21	17	35,421	16	30,654	
West. Penn.....24	17	23,548	17	24,664	
Maryland.....5	4	6,721	4	6,451	
Wheeling district...13	11	22,889	10	20,321	
Ohio:					
Mahoning Valley..16	15	34,800	13	28,513	
Central and North-ern and Mich....18	17	37,792	16	33,700	
Hocking Valley...2	1	243	1	235	
Hanging Rock....10	9	7,029	9	6,389	
Illinois.....20	17	38,085	17	34,648	
Spiegel.....2	2	1,550	2	1,568	
Minnesota.....1	1	1,248	1	1,150	
Wisconsin.....5	3	3,433	3	3,091	
Missouri.....1	1	1,064	1	840	
Colorado.....5	4	8,611	4	6,825	
The South:					
Virginia.....23	13	10,234	14	10,028	
Kentucky.....8	2	1,228	2	1,195	
Alabama.....45	28	30,865	26	28,510	
Tennessee.....16	11	7,143	11	7,154	
Georgia.....1	0	0	0	0	
North Carolina....1	0	0	0	0	
Totals.....375	274	445,468	268	412,563	

**Production of Steel Companies.**—Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Ashland, Republic, Jones & Laughlin, La Belle, Bethlehem, Calumet and Colorado companies show the following totals of product month by month. We present also separately monthly figures of the production of spiegel-eisen and ferromanganese, which is included in the total:

### Production of Steel Companies.—Gross Tons.

—Pig.—	Total production—					Spiegeleisen and ferromanganese.	
	1903	1904	1905.	1904.	1905.		
January.....	502,994	1,129,042	1,290,042	6,673	21,002		
February.....	756,260	1,027,937	1,290,042	12,961	22,431		
March.....	913,412	1,232,255	1,232,255	23,128	21,280		
April.....	966,850	974,006	1,222,710	29,145	20,038		
May.....	1,037,325	927,534	1,287,438	25,755	24,732		
June.....	1,021,839	788,822	1,149,404	24,950	21,761		
July.....	987,855	694,892	1,114,400	27,284	31,220		
August.....	993,564	747,570	1,186,050	19,280	27,461		
September.....	956,363	936,494	1,262,033	20,723	21,645		
October.....	829,215	971,447		13,669			
November.....	553,067	962,384		13,442			
December.....	406,730	1,019,841		13,325			

Furnaces blown in in September included one Crane in the Lehigh Valley, one Warwick in the Schuylkill Valley, Fannie in the Shenango Valley, one Carrie and one Edgar Thomson in Allegheny County, Martins Ferry in the Wheeling District, one Hubbard and Tod in the Mahoning Valley, Franklin and Steelton at Columbus, Ohio, and one Woodward, Oxmoor and Battelle in Alabama.

Among furnaces blown out in September were one Buffalo and Genesee in New York, Buena Vista in Virginia, Dover in Ohio, one Pioneer in Alabama. Struthers in the Mahoning Valley is now out also.



We estimate the production of the anthracite and coke furnaces as follows:

	Monthly Pig Iron Production.				
	May. (31 days)	June. (30 days)	July. (31 days)	August. (31 days)	September. (30 days)
New York...	101,361	97,234	91,839	102,090	102,419
New Jersey...	31,317	27,879	23,613	25,500	24,030
Lehigh Valley.	53,072	50,953	51,092	46,329	47,044
Schuylkill Val.	45,212	44,164	35,569	34,372	37,120
Lower Susquehanna and Lebanon val.	67,131	68,731	70,245	72,203	69,997
Pittsburgh dis.	493,619	476,696	467,026	488,119	449,632
Shenango Val.	174,018	112,880	109,753	137,181	151,804
West Penn...	110,101	106,883	110,761	107,225	100,919
Md., Va. and Kentucky ..	67,757	71,314	73,235	76,975	77,230
Wheeling dis.	102,400	67,823	71,577	75,502	98,097
Mahoning Val.	136,773	118,138	120,284	126,274	153,145
Cent. and No.	135,447	124,601	106,139	136,161	151,233
Hocking Valley and Hanging Rock .....	30,993	30,483	27,676	29,374	31,166
Ill., Mich., Minn., Wis., Mo. and Col. ....	247,307	233,298	224,011	221,542	242,733
Alabama ....	130,071	124,264	126,949	131,261	129,779
Tennessee, No. Carolina and Georgia ...	37,138	37,948	32,166	33,565	32,525
Totals ..	1,963,717	1,793,289	1,741,935	1,843,673	1,898,873

## NEWS OF THE WORKS.

### Iron and Steel.

The charcoal furnace plant of Mitchell, Diggins Iron Company, Cadillac, Mich., is fast nearing completion, and will be placed in operation shortly after the first of the year. The shells of the stack and the stoves have already been built. The furnace will be  $11\frac{1}{2} \times 65$  feet and will be served by three Kennedy stoves, each  $18 \times 60$  feet. The estimated capacity will be from 100 to 125 tons a day. The fuel for the plant will consist of retort charcoal and will be secured from three chemical plants located near the furnace site. The blowing engine is being installed by Wm. Tod Company, Youngstown, Ohio, and Cahall boilers, 900 horse-power capacity, are being installed by the Cahall Sales Department, Pittsburgh.

The blast furnace of the Alabama Steel & Wire Company at Gadsden, Ala., after having been blown out for repairs, was started again about two weeks ago. Previous to the blowing out the furnace had been banked for some time following the accident at the company's Virginia mine.

No. 3 Furnace of the Tennessee Coal, Iron & Railroad Company, at South Pittsburgh, Tenn., made a record one day in September when it produced 230 tons of pig iron of high grade. It was built for a 150-ton furnace, but has run considerably over that capacity for the month of September. The general average has been 202 tons for every 24 hours, exceeding many furnaces with a much larger capacity.

The Westmoreland Steel Company, Greensburg, Pa., is being reorganized, a number of changes having been made and others are contemplated. W. D. Corcoran, for some years manager of the steel plant of Howe, Brown & Co. at Pittsburgh, has been elected president and general manager. J. H. K. Burgwin is treasurer. The company makes tool steels, die blocks, forgings and high grade steel bars.

The Lookout Mountain Iron Company, Battelle, Ala., has for some time been making extensions to its plant. It has opened two new coal mines, two ore mines and is lining a fourth stove in its furnace. A new air compressor has recently been added to its equipment.

### General Machinery.

The Hathorn Mfg. Company, Bangor, Maine, has sold its machinery for the manufacture of steel balls for ball bearings to the Standard Roller Bearing Company, Philadelphia. The Hathorn Company will continue to do a business of light forging.

The F. R. Patch Mfg. Company, Rutland, Vt., manufacturer of stone working machinery, has purchased the C. T. Maynard machine shop and foundry, including all the tool machinery and general equipment. The F. R. Patch Company states that the purchase of the new property does not mean the enlargement of business to any extent, as the only part of the C. T. Maynard business which it is proposed to continue is the manufacture of mill jacks, which has been carried on for many years and for which there is a considerable demand.

The Shawmut Motor Company, originally incorporated as the Courier Motor Company, has established a factory at Stoneham, Mass., and will manufacture the Shawmut touring car, which will be a high grade machine. The company has an authorized capital stock of \$150,000. The officers are: President, E. C. Lee; vice-president, J. A. Highlands; treasurer, J. S. Newton; clerk, Odin Roberts, all of Boston.

The North Birmingham Forge Company, now operating works at North Birmingham, Ala., is the only concern in that section doing drop forge work. J. H. Minge, Jr., is president. W. E. Michalis is manager and J. W. Sloss is secretary and treasurer.

The Johns & Steward Machine Company, Birmingham, Ala., has extended its machine and blacksmith shops to double the previous capacity. It is in the market for a modern second-hand 1000-pound steam hammer.

Charles T. Lehman, Birmingham, Ala., dealer in new and second-hand machinery, has, in addition to his premises at 1900-1908 Powell avenue, taken a building of two stories on the opposite side of the street at 1921-1923, which will be used exclusively for the sale of new machinery. The old location will be devoted to the sale of second-hand machinery. He has added the sale of duplex and single cylinder pumps, saw mills, engines, electric motors and locomotives to his former lines.

The Buffalo Forge Company is about to ship to Manila a carload of modern machinery to be used by the Philippine planters engaged in sugar manufacturing and rice raising industries. Among the machines to be shipped in the consignment are 18 rice hulling and polishing machines and ten complete cane mills or crushers.

The New England Dredging Company, Boston, Mass., is to erect a one-story machine shop on Mt. Vernon street, the building to be  $35 \times 43$  feet.

James D. Wilson, receiver of the Solid Steel Tool & Forge Company, Brackenridge, Pa., has secured from the courts an extension of his receivership until January 1, subject to the sale of the plant. During his receivership Mr. Wilson has made large profits for the concern and believes he can make more money by continuing to operate the plant as receiver.

The Morgan Construction Company, New York, reports sales of six producers for heating large forges to the Babcock & Wilcox Company, at Bayonne, N. J., and four to the Pennsylvania Railroad Company for its Altoona shops. Among other recent sales of its continuous automatic gas producers are two to the Cambria Steel Company, Johnstown, Pa. The latter order is especially interesting in view of the fact that the producer is to be used for handling an inferior local coal.

### Power Plant Equipment.

The William Tod Company, engineers, founders and machinists, Youngstown, Ohio, is now completing in its shops a 12,000-000-gallon Reynolds vertical, triple expansion, crank and fly wheel pumping engine for the city of Canton, and is shipping to the Alabama Consolidated Coal & Iron Company, at Gadsden, Ala., two pairs of disconnected compound blowing engines,  $44 \times 84$  and  $60 \times 84$  inches, equipped with Corliss steam gear and positive air gear.

The Robbins Conveying Belt Company has recently secured through Messrs. J. G. White & Co., Park Row Building, New York, the contract for the belt conveyors for the United States naval coaling station at Olongapo, Philippine Islands. The Robbins Company is also constructing a belt conveyor for handling coal for the Lackawanna Steel Company's plant at Buffalo, and expects to ship shortly a large order of belt conveyors for the Santand Iron Mines, Santand, Spain.

The pump manufacturing business of Irwin Van Wle, Syracuse, N. Y., has been taken over by the Van Wle Pump Company, which was recently incorporated. The officers are Irwin Van Wle, president and general manager; Stephen Bastable, vice-president, and G. W. O'Brien, secretary and treasurer.

The Long Island City Railroad has filed plans for two pump houses to be installed in the borough of Queens, New York.

The Westinghouse Machine Company, East Pittsburgh, Pa., has recently secured some very large orders for steam turbines. Among these is one for 1500 horse-power for the Toledo Heating & Lighting Company, Toledo, Ohio. Another is for 750 horse-power for the new Washington (D. C.) terminal station of the Pennsylvania Railroad. One for 1000 horse-power has been ordered by the Winston-Salem Power Company, Salem, Mass. The largest order is a 2000 horse-power machine for the Ottawa Electric Company. The Water, Heating & Gas Company of Hutchinson, Kan., has ordered a 700 horse-power machine. The total capacity of such recent orders is 9700 horse-power.

The Renfrow Briquette Machine Company, St. Louis, Mo., has incorporated with a capital stock of \$1,000,000 to manufacture a new coal briquetting machine. W. C. Renfrow, ex-Governor of Oklahoma, is president, James N. Smith secretary and treasurer and Edgar D. Misner general superintendent.

The Stirling Consolidated Boiler Company has been incorporated under the laws of New Jersey to acquire the water tube boiler business and plants of the Stirling Company, Barberton, Ohio, and the Aultman & Taylor Machinery Company, Mansfield, Ohio.

The Indianapolis Union Railway Company, Indianapolis, Ind., will build a new heating and lighting plant for the Union Station, to cost \$75,000.

The Marion County Commissioners, Indianapolis, Ind., awarded to the Westinghouse Machine Company the contract for smoke

consuming and fuel saving equipment for the county poor-house for \$5490. The equipment included three stokers and an induced draft apparatus. Other bidders were the Detroit Stoker & Foundry Company, Under Feed Stoker Company of America, Brown & Farnell and the G. H. Scharf Company.

#### Foundries.

The Wabash Foundry & Machine Company, Wabash, Ind., which was recently incorporated, will take over the business of the Lawton Mfg. Company and will continue the manufacture of gray iron castings and general machine work.

The United States Cast Iron Pipe & Foundry Company, 71 Broadway, New York, is making extensive improvements in its plants at Burlington, N. J., and Bessemer, Ala., for the double purpose of increasing their productive capacity and more thoroughly systematizing manufacturing operations.

The Velch-Matthews Foundry & Machine Company, Bessemer, Ala., recently incorporated, has bought ground on which it is erecting a foundry 60 x 76 feet and machine shop 26 x 30 feet. It has installed a number of machines and expects to be in the market in a few months for more. The company intends manufacturing all grades of iron castings and small classes of stationary engines having new features. The foundry is operating with 10 hands, which will be doubled in a few days.

The Western Malleable Steel Company, Detroit, Mich., of which N. M. Kaufman is president, C. E. Gordon vice-president and S. R. Kaufman secretary and treasurer, is erecting a malleable foundry which will cover 20,000 square feet of floor space, with a capacity of 15 tons per day. It is expected that in 30 days the buildings will be completed and fully equipped with the best modern equipment for the manufacture of light steel castings such as are required by manufacturers of automobiles, pneumatic tools, gas engines and general light machinery. For power four General Electric motors of 75 horse-power will be installed, which will drive the blowers, six grinders, pattern shop machinery, &c. The malleable steel castings which the company is to make is stated by it to be a combination of special brands of imported irons, purified and refined by a special process.

#### Bridges and Buildings.

The Lynn Building Trust, Lynn, Mass., is to erect a building for general manufacturing purposes, to be 55 x 300 feet and eight stories. Much of the building has already been let, and if tenants are found for the whole of it another similar building will be erected.

The Toledo-Massillon Bridge Company, Toledo, Ohio, has decided to postpone the erection of its new buildings until spring on account of inability to secure prompt deliveries of structural material. Work will start early and the plant will be a large one.

W. T. Whiting, chairman of the special bridge commission, Peoria, Ill., will receive competitive plans until October 16 for a steel or reinforced bridge to be built across the Illinois River.

#### Fires.

The plant of the Weller Rolling Mill & Forge Company, at Anniston, Ala., was destroyed by fire about a week ago. The loss is said to be about \$75,000.

The brass foundry of Ely C. Upham, New Haven, Conn., was recently burned, the loss being estimated at \$12,000.

#### Hardware.

The J. H. & F. A. Sells Company, Columbus, Ohio, manufacturer of harness, saddlery and horse collars, is just finishing a new collar factory. The plant will be electrically operated and will be placed in operation about November 1.

The Dowst Brothers Company, manufacturer of metal novelties, Chicago, is erecting a new building, four stories and basement, 25 x 106 feet. The present plant of the company, which is at Congress and Green streets, will be removed to the new building, 9-13 South Ann street, upon its completion, as will also the plant of the Union Metal Mfg. Company, the business of which was recently purchased by the Dowst Company. Employment will be given to 160 men.

The Bellefontaine Hame Company, Bellefontaine, Ohio, has incorporated to take over the business of the Bellefontaine Hame & Tool Company, which will be continued in the same plant.

The Richards Mfg. Company, Aurora, Ill., on account of the rapid growth of its business, has found it necessary to build an addition to its plant 64 x 138 feet, which will be used for manufacturing and storage purposes. A brick building for japanning, 24 x 40 feet, and a warehouse for iron and steel, 30 x 80 feet, are also being added to the plant.

The Eagle Horseshoe Company, South Milwaukee, Wis., has resumed operations after having been closed down for three months. C. S. Otjen is the superintendent in charge.

Deere & Co., manufacturers of plows, Moline, Ill., have just completed a new six-story and basement warehouse at a cost of something like \$100,000 which will afford between four and five acres of additional floor space and greatly facilitate shipping operations. The concern has experienced much difficulty in the past owing to the fact that the demand for its products

has increased faster than its warehouse facilities, making it troublesome to get goods out of the way so as to use the manufacturing department of the plant to its greatest capacity. With the increased storage room, however, the company will be able to ship promptly and always have a sufficient quantity of manufactured goods on hand to draw from.

Nichols Bros., Greenfield, Mass., have sold their plant, consisting of real estate, machinery, &c., to the American Tap & Die Company of that town, the transfer taking place October 1. The American Tap & Die Company has recently erected a factory on land adjacent to that of Nichols Bros. and has moved into its new quarters. J. H. Nichols being the president and W. E. Nichols the treasurer of the corporation, and having its management, consolidation was effected for the greater convenience in selling the products and handling the business generally. The business of Nichols Bros. in cutlery and butcher tools will be run as a separate department, and will be known as Factory 1. The threading tool department of the American Tap & Die Company, which is located in the new building, will be known as Factory 2. The American Tap & Die Company is a Massachusetts corporation organized three years ago with a paid in capital stock of \$75,000.

#### Miscellaneous.

The Ernst Weiner Company has received an order during the last month from a Central American railroad for 30 narrow gauge platform cars. The cars will have a 3-foot gauge and will be 8 feet wide and 30 feet long, while the wheels will be 24 inches in diameter and will be fitted with diamond trucks.

A corporation is organizing at Hartford, Conn., to manufacture and put on the market a new type of envelope machine. The company will probably be called the American Envelope Company. Judge Ralph M. Grant, Hartford, is the prime mover in the plan.

The Elmore Furnace Company, Elmore, Ohio, manufacturer of tubular hot air furnaces, is moving into a new factory in that city. The main building is 45 x 140 feet, two stories high, and built of cement blocks. The second floor is being fitted up for a machine shop.

Contract for a larry trestle of steel construction has been awarded to Wm. B. Scaife & Sons Company, Pittsburgh, Pa., by the Colonial Coke Company, to be erected at its Fayette County works.

The Babcock Elevator Safety Company, Pittsburgh, has been incorporated with a capital of \$300,000 to construct elevators and elevator controllers and other elevator devices. The incorporators are: Frank T. Thompson and Joshua J. Jones of Pittsburgh, and Frank H. Babcock of Butler, Pa.

At the annual meeting of the stockholders of the Westinghouse Air Brake Company, held at Wilmerding, Pa., last week, George Westinghouse was elected president and directors as follows: George Westinghouse, Robert Pitcairn, H. H. Westinghouse, John Caldwell, E. M. Herr, George C. Smith and H. G. Prout. Mr. Smith and Colonel Prout are new members of the board. Mr. Smith is at the head of the Security Investment Company and Colonel Prout is vice-president of the Union Switch & Signal Company, Pittsburgh.

The Enterprise Boiler Company, Youngstown, Ohio, builder of steel plants, blast furnaces, boilers, steel stacks and heavy plate work, has recently furnished 15 steel mining tanks 15 feet in diameter and 18 feet high, which were built for the Trent Engineering & Machinery Company, Salt Lake City, Utah, at the plant of the Bamberger-DeLamar Gold Mining Company, DeLamar, Nev. The concern is also building a number of tanks at the plant of the Westinghouse Machine Company at East Pittsburg for the Booth Water Softening Company, which is installing a water softening equipment at the above plant.

The Blaurock-Hasty Company, Chicago, has dissolved by mutual consent, and its stockholders have formed the Arlon Wire & Iron Works. The members of the new company are the same as those who constituted the Blaurock-Hasty Company, with the exception of O. R. Hasty, who has disposed of his interest to Nicholas C. Schommer. The new company will retain the quarters formerly occupied by its predecessor at 96-98 West Lake street and will confine its business chiefly to the manufacture and erection of all kinds of ornamental brass, wire and iron work, making a specialty of office and bank fixtures, iron doors, shutters, window guards, wire signs and the like.

The Richards Iron Works, Birmingham, Ala., is to incorporate with a capital stock of \$25,000 for extension of its business, which consists of the manufacture of elevators, hoisting gears, iron and steel structural work and general repairing.

The Pittsburgh Railways Company has placed an order with Taylor & Dean, Pittsburgh, for 1,000 street car fenders, and an order with the Chester B. Albree Iron Works, Allegheny, Pa., for 500 street car fenders. The fender is the invention of an employee of the traction company named Reynolds.

The Home Trust Company, Derby, Conn., is offering for sale the plant formerly occupied by the Birmingham Brass Company at Shelton, Conn., consisting of two three-story buildings each 40 x 135 feet and a one-story mill 135 feet square, equipped with shafting, milling fixtures, two 530 horse-power water wheels, &c.



The Michigan Steel Boat Company, Detroit, Mich., has bought the old Detroit United car barns on Jefferson avenue from the Olds Motor Works, which it will use in the building of steel and wooden boats of all styles. The property adjoins the present plant of the company and will give it over 50,000 square feet of floor space, making the plant one of the largest of its kind in this country.

The Continental Can Company, which has a large plant in Syracuse, N. Y., and Chicago, will move its machine shop from Rochester to its plant in Syracuse. The Rochester shop has been used for making the special machinery for the two plants. The machinery is finished, but some of the men will be employed in the Syracuse shop for repair work and the company will branch out into the manufacture of special machinery for others. It is expected that this branch of the industry will be considerably enlarged. The company has had a very prosperous year.

Arrangements have been completed for the combination of the Howard Iron Works, Buffalo, N. Y., and the Gardner Elevator Company, Detroit, Mich., under the name of the Gardner-Howard Company. The capital stock of the amalgamated company is to be \$200,000. The Detroit plant will be closed and the equipment moved to Buffalo, where the old Howard Iron Works plant will be enlarged to three times its present capacity and the manufacture of freight and passenger elevators and various kinds of machinery, including printers' and bookbinders' machinery, will be continued under the new management. The officers and directors of the combined company are: H. F. Madden, Buffalo, president; R. W. Gardner, Detroit, vice-president; F. S. Porter, secretary; Judge Loran L. Lewis of Buffalo and O. N. and G. H. Porter of Detroit.

A corporation known as the Potsdam Paper Mills has been organized to construct a paper making plant at Potsdam, N. Y. The plant will consist of a main building 75 feet wide and 275 feet long and will have a capacity of 12,000 rolls of unprinted wall paper a year and 6000 rolls of printed paper. All the machinery has been contracted for.

## Trade Publications.

**Gas Engines.**—De La Vergne Machine Company, East 138th street, New York. Catalogue. Size,  $10\frac{1}{2} \times 7\frac{1}{2}$  inches; pages, 47. Devoted to the Koerting four-cycle gas engine, which it illustrates and describes in detail, first covering an explanation of the principle of its operation and the advantages connected therewith. A number of views are given of the works, interior and exterior. An interesting page gives a diametric comparison of the highest thermal efficiencies of various classes of engines from hot air engines to steam engines of all types and a Koerting gas engine. Another section of the catalogue deals with suction and pressure gas producers. A number of useful tables are appended.

**Shapers.**—Cincinnati Shaper Company, Cincinnati, Ohio. Catalogue D. Size,  $6 \times 9$  inches; pages, 47. Gives illustrated descriptions of single geared and back geared 16-inch crank shapers, 20 and 24 inch back geared crank shapers, 26 and 30 inch triple geared rack shapers, details of special attachments, including a variable automatic power down feed, concave attachment, revolving table, tilting table, tilting top for table, cone arbors and vises. As special tools are shown a 20-inch crank shaper, equipped with automatic circular feeding head, especially designed for machining locomotive driving boxes; a heavy duty crank shaper described in *The Iron Age* June 8, 1905, an 18-inch single head traverse shaper, an 18 and 22 inch traverse shaper with one or two heads, a single head 26-inch and 26 and 36 inch double head traverse shapers, and a 24-inch swiveling saddle traverse shaper. The succeeding pages show a number of motor drives and a view of the traverse grinder described in *The Iron Age* September 14, 1905.

**Motors.**—Stanley-G. I. Electric Mfg. Company, Pittsfield, Mass. Bulletin 145. Deals with Type L direct current motors, their construction, application, price-list, dimensions, specifications, diagrams for wiring, starters for use with motors, and an abstract from the insurance rules for the installation of direct current motors. Bulletin 460 (superseding bulletin 360) is confined to electric column and electric bench grinders and buffers. Small circular shows views of complete motors and parts, these including the Type L and Type W direct current motors and single phase and polyphase induction motors.

**Controllers.**—Cutler-Hammer Mfg. Company, Milwaukee, Wis. Bulletin 59. Gives a description of radial arm reversible controllers with illustrations, dimensions, diagrams and price-lists. Bulletin 67 gives dimensions of resistance for use with nonreversible drums and dimensions of the nonreversible drums. Bulletin 68½ gives dimensions of compound full reverse drums and resistances for use with them. Bulletin 78 contains a description and price-list of compound full reverse machine tool controllers of the drum type.

**Ice Machinery.**—Rider Ice Machine Company, Scottsdale, Pa. Two bulletins. One pertains to ammonia compressors, giving table of sizes, principal advantages, sectional and detailed views, an explanation of construction and operation. The other

bulletin is concerned with two-pipe condensers and treats design and construction in considerable detail.

**Engineering and Contracting.**—J. G. White Company, Incorporated, 43 Exchange place, New York. Pamphlet. Contains an announcement of the Canadian White Company, to carry on an engineering and general contracting business in the Dominion of Canada, headquarters being the Sovereign Bank Building, Montreal, Canada. Its work will be along lines similar to those of the associated companies, J. G. White Company, Incorporated, New York; J. G. White Company, Limited, London, England, and the Waring-White Company, Limited, London, England. It will be equipped to handle large construction contracts for steam and electric railways and will be prepared to design, build, equip and operate electric lighting plants and power installations, gas works, water supply, sewage systems, piers, docks, harbor works, office buildings, apartment houses, hotels, &c. The company does not manufacture machinery or apparatus, but purchases from the leading manufacturers.

**Lathes.**—Gisholt Machine Company, Madison, Wis. Loose leaf, pages 31 and 32. Describes a wing rest furnished when specified on Gisholt lathes. It is an auxiliary tool post holder which may be used to advantage when turning work of great length or diameter, as it brings the support of the cutting tool nearer the work.

**Steam Hammers.**—Lane Tool Company, Cleveland, Ohio. Illustrated catalogue,  $6 \times 9$  inches; pages, 16. Shows single frame and double frame steam hammers and steam drop hammers, gives specifications of sizes and capacities, description of foundation, views of different patterns and instructions for setting and operating. An inclosed circular pertains to a steam gravity drop hammer.

**Screens.**—Traylor Engineering Company, 114 Liberty street, New York City. Catalogue 1. Size,  $6\frac{1}{2} \times 9\frac{1}{2}$  inches; pages, 52. Confined to the Traylor centripetal screen, which is claimed to be an efficient screening device and a perfect sizer. It is arranged in vertical sets of one or more units and is radically different from any older type of screen in its principles of operation. The principal claims are that it screens any material, either wet or dry, up to 100 mesh; is more accurate than even the hand screen; the meshes are kept from clogging by its normal motion; its installation and cost of running are cheap, and that it is of long wearing quality. The description is gone into very fully and a number of drawings indicate typical plant arrangements. Tables of sizes are included.

**Blowing Engines.**—Southwark Foundry & Machine Company, Philadelphia, Pa. Catalogue,  $6 \times 9$  inches; pages, 47. Confined to blowing engines and their use and operation. Quite an extended discussion is given to the uses of blowing engines, their economical speeds and the advantages of the Southwark air valve gear. A number of indicator cards are shown to indicate that at the higher speeds a cylinder full of air at practically atmospheric pressure is delivered under all conditions and that there is no loss of efficiency at the higher speeds. The action of the air valves is described in connection with sectional views and detailed photographs. The types of blowing engines illustrated include vertical long crosshead, compound disconnected, horizontal quarter crank and vertical steeples engines. Appended are a few words concerning engines driven by furnace gas engines and a list of users of Southwark blowing engines.

Announcement is made that in furtherance of the project of many years to utilize the fall of the Susquehanna River, 3000 feet below McCall's Ferry, Pa., a merger has been made of the Hillside Water & Power Company and the Susquehanna Water & Power Company into the McCall's Ferry Power Company, with a capital of \$10,000,000. Cary T. Hutchinson of New York, who has spent several years in acquiring the property and water rights, is at the head of the merger. The new company has purchased all the lands contiguous to the river on both sides for about 8 miles. The corps of engineers includes William Barclay Parsons. The dam to be constructed will extend from the towpath of the old Susquehanna and Tide Water Canal across the river to Frey's Island and the plant. It will be 2600 feet long, 32 feet high, 80 feet thick at the base and 25 feet thick at the top. The power house will be 600 feet long, 75 feet wide and about 90 feet high. Fifteen wheels with vertical turbine shafts will be installed at first and about 100,000 horse-power of electricity generated. Baltimore will take a large amount of power.

Smith Bros., Birmingham, Ala., who have hitherto conducted business as Iron brokers under their own name, have changed the title of the firm to the Alabama Warehouse Company. They have an office in the Woodward Building and also an office and warehouse at Anniston, Ala.



## The Iron and Metal Trades

Our monthly blast furnace returns show that production in September, in spite of the fact that it was a short month, was 1,898,873 gross tons as compared with 1,843,673 gross tons in August and 1,741,935 tons in July. Returns from all the steel companies make their Pig Iron product 1,262,033 tons in September against 1,186,050 tons in August, an increase in spite of the fact that the Pittsburgh district produced only 449,632 tons in September as compared with 488,119 tons in August. The returns indicate that the merchant furnaces did not do as well in September as expected, their production having been 657,623 tons, while they made 636,840 tons in August.

The capacity at work has increased in September and stood on October 1 at 445,468 tons per week as contrasted with 412,563 tons on September 1.

There is the promise therefore of an increased production, which the country needs so sorely.

There has been a good deal of buoyancy in the Pig Iron markets in all parts of the country and prices have been further advanced. A growing number of furnaces hesitate about committing themselves heavily for the future, in view of the considerable rise in costs. Some of the large foundry interests have bought quite heavily. In the West the International Harvester Company has purchased between 45,000 and 50,000 tons, 20,000 tons from an Alabama interest, 7000 tons from Virginia producers and the balance from Northern furnaces. Three Cast Iron Pipe concerns have taken very close to 50,000 tons between them and there has been some very good buying by the general foundry trade, a Pittsburgh melter taking 11,000 tons.

Quite a number of Eastern open hearth plants are negotiating for additional quantities of Basic Iron, one of them being in the market for 1200 tons, and the others for somewhat smaller lots. While the buying of Bessemer and Basic Iron in the Central West has been rather light during the past week, it is known that two large Steel interests are figuring on the purchase of some large blocks for the first six months of next year.

Some further goodly orders have come to the Rail mills, including 45,000 tons additional from the Northern Pacific, 35,000 tons from the Great Northern, 29,000 tons from the Minneapolis & St. Louis and 13,000 tons from the Kansas City, Mexico and Orient. Manufacturers of Frogs and Switches have ordered between 10,000 and 12,000 tons, and it is reported that one of them has been forced to place a small order for Girder Rails abroad in order to secure prompt delivery. Another maker in this branch is studying the question of drawing a very considerable supply of Girder Rails from Germany. A fair proportion of the New Haven order has been allotted, but the whole of it has not yet been given out.

A good deal of business is pending in bridge material, fully 60,000 tons being under negotiation. The Atchison road has just placed 16,000 tons, and the order for 7000 tons of material for the Saybrook bridge of the New Haven road has been also taken by the American Bridge Company. Small quantities of foreign structural material are being ordered for prompt delivery.

In the Eastern Skelp trade, an order for 5000 tons, the first for many months, is regarded as the harbinger of better times.

The lighter lines are active and in good shape, and even the Tin Plate trade is showing signs of renewed life.

Reports from Europe continue very encouraging. There has been a smart advance in the prices of Plates, Structural Material and Bars in England, and the revival there is reflected by quite a pressure upon our producers here to sell material. This, however, they decline to do beyond certain well defined lines.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,  
Declines in Italics.

At date, one week, one month and one year previous.

	Oct. 11, 1905.	Oct. 4, 1905.	Sept. 13, 1905.	Oct. 12, 1904.
<b>PIG IRON:</b>				
Foundry Pig No. 2, Standard, Philadelphia .....	\$17.25	\$17.00	\$16.25	\$14.25
Foundry Pig No. 2, Southern, Cincinnati .....	15.25	15.00	14.25	12.50
Foundry Pig No. 2, Local Chicago .....	17.25	16.75	16.25	13.50
Bessemer Pig, Pittsburgh .....	16.35	16.35	15.85	12.85
Gray Forge, Pittsburgh .....	15.60	15.35	14.60	12.00
Lake Superior Charcoal, Chicago .....	18.50	17.50	17.00	15.25

### BILLETS, RAILS, &c.:

Bessemer Billets, Pittsburgh .....	25.00	25.50	25.00	19.50
Steel Forging Billets, Pittsburgh .....	29.00	29.00	29.00	.....
Open Hearth Billets, Philadelphia .....	28.00	28.00	27.00	22.00
Wire Rods, Pittsburgh .....	31.50	31.50	31.00	26.00
Steel Rails, Heavy, Eastern Mill .....	28.00	28.00	28.00	28.00

### OLD MATERIAL:

O. Steel Rails, Chicago .....	14.50	14.50	14.50	11.00
O. Steel Rails, Philadelphia .....	16.50	16.50	16.25	12.25
O. Iron Rails, Chicago .....	22.00	22.00	20.50	16.50
O. Iron Rails, Philadelphia .....	22.50	22.00	22.00	16.00
O. Car Wheels, Chicago .....	16.00	16.00	15.50	11.75
O. Car Wheels, Philadelphia .....	16.00	15.50	15.50	12.00
Heavy Steel Scrap, Pittsburgh .....	16.50	16.50	16.00	12.00
Heavy Steel Scrap, Chicago .....	14.50	14.50	14.50	10.50

### FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia .....	1.73½	1.73½	1.63½	1.43½
Common Iron Bars, Chicago .....	1.75	1.70	1.65	1.35
Common Iron Bars, Pittsburgh .....	1.74½	1.74½	1.70	1.30
Steel Bars, Tidewater .....	1.64½	1.64½	1.64½	1.44½
Steel Bars, Pittsburgh .....	1.50	1.50	1.50	1.30
Tank Plates, Tidewater .....	1.74½	1.74½	1.74½	1.54½
Tank Plates, Pittsburgh .....	1.60	1.60	1.60	1.40
Beams, Tidewater .....	1.89½	1.89½	1.89½	1.54½
Beams, Pittsburgh .....	1.70	1.70	1.70	1.40
Angles, Tidewater .....	1.89½	1.89½	1.89½	1.54½
Angles, Pittsburgh .....	1.70	1.70	1.70	1.40
Skelp, Grooved Steel, Pittsburgh .....	1.50	1.50	1.50	1.30
Skelp, Sheared Steel, Pittsburgh .....	1.55	1.55	1.55	1.35
Sheets, No. 27, Pittsburgh .....	2.15	2.20	2.20	2.00
Barb Wire, Galv., Pittsburgh .....	2.25	2.25	2.20	2.05
Wire Nails, Pittsburgh .....	1.80	1.80	1.75	1.65
Cut Nails, Mill .....	1.65	1.65	1.60	1.60

### METALS:

Copper, New York .....	16.62½	16.62½	16.00	13.00
Spelter, St. Louis .....	5.85	5.85	5.85	4.95
Lead, New York .....	4.95	4.85	4.85	4.20
Lead, St. Louis .....	4.92½	4.82½	4.75	4.12½
Tin, New York .....	32.20	32.50	32.05	28.35
Antimony, Hallett, New York .....	12.25	12.50	14.00	7.00
Nickel, New York .....	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York .....	3.49	3.74	3.74	3.49

## Chicago.

FISHER BUILDING, October 10, 1905.—(By Telegraph.)

Pig Iron demand is undiminished, consumers continuing to cover requirements for the first half of 1906. The International Harvester Company has purchased between 45,000 and 50,000 tons for this delivery, the tonnage going to Northern, Southern and Virginia producers. The prices paid for this Iron are reported as follows: \$12 to \$12.25, Birmingham, for No. 2, and \$14, Virginia furnace, for the same grade, while the Northern Malleable Bessemer, aggregating 1000 tons, was placed at about \$17, Chicago. Scattered sales of Pig Iron were heavy and the week's total was close to 60,000 tons. Both Northern and Southern producers have again advanced prices, but the upward movement rather than checking demand seems to be an incentive to bring new buyers into the market. Without the loss of strength the market on Finished Material has settled down, owing to the heavy buying in the past two months. Consumers are now principally concerned over the delivery of material, principally Plates, Shapes and Bars, and local jobbers report a greater congestion at the Structural mills than at any time this year, while on Steel Bars consumers are requested to furnish specifications three months in advance. The shortage of cars is already affecting the shipment of material and local terminal facilities are inadequate for transfer and delivery. Additional Rail orders taken by the local mill during the week amounted to 35,000 tons and the total bookings for 1906 now amount to 600,000 tons. The leading Western trunk lines have practically all covered their next year's Rail requirements. Light Rails have been advanced on account of the large tonnage booked recently, one Southern lumber interest having pur-

chased 3000 tons for the construction of a private road. Sheets are firmer, as the mills are not so anxious for tonnage as they were some time ago, and the price of 2.20c. for 28-gauge Black on car lots with immediate specifications has been withdrawn.

**Pig Iron.**—The recent sharp advances are bringing large consumers into the market who have steadfastly refused to cover their requirements for the first half of next year on this upward movement. The heavy purchase of the International Harvester Company will undoubtedly be followed by other large interests whose future requirements are still uncovered, and still further advances on Pig Iron are anticipated. The bulk of the International Harvester Company's order went to the Southern interests, amounting to 20,000 tons, while Virginia furnaces received 7000 tons, and the remainder was taken by Northern producers. Virginia furnaces that opened their books last week have already closed a round tonnage at \$14 to \$14.50, furnace, which is equivalent to \$13 to \$13.50, Birmingham, for No. 2. This makes the Chicago delivery price \$16.65 to \$17.15, which is somewhat below the price asked by Northern furnaces. Three of the largest Southern Iron producers have again withdrawn from the market, but are willing to open their books from time to time to take on large and desirable tonnages. There is no regularity about the prices they quote and they range from \$12.75 to \$13.50, Birmingham, for No. 2. Lake Superior Charcoal Iron has again been advanced and is now quoted at \$17 at the furnace, equivalent to \$18.50, Chicago. Recent sales of Charcoal Iron have been unusually heavy on account of the low prices that have been prevailing, and the large tonnage taken on, most of which provided for immediate delivery, has entirely wiped out the large stock which these furnaces carried in their yards during the summer months. The following quotations represent the prices named by the furnaces on Iron for delivery the remainder of the year and the first half of next year.

Lake Superior Charcoal.....	\$18.50
Northern Coke Foundry, No. 1.....	\$18.00 to 18.25
Northern Coke Foundry, No. 2.....	17.25 to 17.85
Northern Coke Foundry, No. 3.....	16.75 to 17.25
Northern Scotch, No. 1.....	18.00 to 18.25
Ohio Strong Softeners, No. 1.....	18.30 to 18.55
Ohio Strong Softeners, No. 2.....	18.05 to 18.30
Southern Silvery, 4 to 6 per cent. Silicon.....	17.90 to 18.90
Southern Coke, No. 1.....	16.90 to 17.40
Southern Coke, No. 2.....	16.40 to 16.90
Southern Coke, No. 3.....	15.90 to 16.40
Southern Coke, No. 4.....	15.65 to 16.15
Southern Coke, No. 1 Soft.....	16.90 to 17.40
Southern Coke, No. 2 Soft.....	16.40 to 16.90
Southern Gray Forge.....	15.40 to 15.90
Southern Mottled and White.....	15.40 to 15.90
Malleable Bessemer.....	17.25 to 17.50
Standard Bessemer.....	17.30 to 17.80
Jackson Co. and Ky. Silvery, 6 % Silicon.....	18.80
Jackson Co. and Ky. Silvery, 8 % Silicon.....	19.80
Jackson Co. and Ky. Silvery, 10 % Silicon.....	20.80
Alabama Basic.....	17.65

**Metals.**—Copper, Tin and Spelter remain unchanged, while both Desilverized and Corroding Lead have been advanced 15c. per 100 lbs. We quote: Casting Copper, 16½c. to 16¾c.; Lake, 16¾c.; Pig Tin, car lots, 33c. to 33½c.; small lots, 34c. to 34½c.; Spelter, prompt delivery, 6.05c. for car lots; Lead, Desilverized, 4.95c.; Corroding, 5.05c. for 50-ton lots; on car lots, 2½c. per ton higher; Light Brass 7¼. Sheet Zinc is \$7.50, list, f.o.b. LaSalle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 14c.; Heavy Copper, 13¾c.; Copper Bottoms, 12¾c.; Copper Clips, 13¾c.; Red Brass, 12¾c.; Red Brass Borings, 10¾c.; Yellow Brass, Heavy, 9¾c.; Yellow Brass Borings, 7¾c.; Light Brass, 7¼c.; Lead Pipe, 4¼c.; Tea Lead, 4c.; Zinc, 4½c.; Pewter, No. 1, 21c.; Block Tin Pipe, 27½c.

(By Mail.)

**Billets.**—The demand for Forging Billets is light, large consumers having covered requirements some time ago, and the buying is almost entirely limited to small lots for early deliveries. Large lots for future delivery are unchanged at \$30 for base sizes, with the usual extras, and \$32 in car-load lots.

**Rails and Track Supplies.**—Rail bookings during the past week aggregated 35,000 tons, one contract calling for 25,000 tons being placed by a large Western road. The Illinois Steel Company now has approximately 600,000 tons booked for 1906, and with the tonnage that will be carried over into next year only a very small capacity is still available during December, 1906. We also note the purchase of 3000 tons of 45-lb. sections to be used in building a lumber road in the South. The buying of light sections has been unusually heavy so far this month, aggregating nearly 6000 tons, and prices have been advanced slightly. The most important Western roads have practically covered their 1906 Rail requirements and buying will henceforth be limited almost entirely to small lots. Spikes, on account of the recent heavy buying to accompany Rail orders, have been advanced \$1. We revise quotations as follows: Angle bars, accompanying rail orders, 1906 delivery, 1.50c.; car-load lots, 1.75c.; Spikes, 1.85c. to 1.95c.; Track Bolts,

2.40c. to 2.50c., base, Square Nuts. The store prices on Track Supplies range from 15c. to 20c. above mill prices. Light Rails, 30-lb. to 45-lb. sections, \$25.50; 25-lb., \$26.50; 20-lb., \$27.50; 16-lb., \$29; 12-lb., \$30; lighter sections down to 8-lb., \$35 to \$38, f.o.b. mill. Standard sections are quoted \$28, f.o.b. mill, full freight to destination.

**Structural Material.**—The congestion at the mills instead of improving, as would naturally be expected at this season of the year, is growing more acute and deliveries on practically all sizes is being further deferred. While no large building contracts are under negotiation a large amount of small work is under way, practically all requiring prompt delivery, and the material is being furnished largely by the jobbing interests. The cost of building operations during the first nine months of this year shows an increase over the same period of last year of \$16,654,875 and the indications are that this will be the largest year in the city's history. The only large operations that are now being figured upon are the City Hall and additions to the Auditorium Annex and the Chicago Athletic Club. The average price quoted by jobbers on material for prompt delivery is 2.50c., f.o.b. Chicago, on assorted sizes. For future delivery from mill Structural Material is quoted as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.86½c.; Angles, 3 to 6 inches, ¼-inch and heavier, 1.86½c.; Angles larger than 6 inches on one or both legs, 1.96½c.; Beams, larger than 15 inches, 1.96½c.; Zees, 3 inches and over, 1.86½c.; Tees, 3 inches and over, 1.91½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending, or other shop work. Store prices on Angles, Beams and Channels range from 2.50c. to 3c., according to quantity on hand in store or obtainable from mill.

**Plates.**—Considerable Lake vessel business is still under negotiation, but no additional tonnage has been placed during the week. Railroads are buying heavily for future delivery, and other consuming interests are covering requirements in anticipation of an early advance. Quotations are unchanged, as follows: Tank quality, ¼-inch and heavier, wider than 6¼ and up to 100 inches wide, inclusive, car lots, Chicago, 1.76½c.; 3-16-inch, 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Flange quality in widths up to 100 inches, 1.86½c., base, for ¼-inch and heavier, with the same advances for lighter weights; Sketch Plates, Tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-inch and heavier, up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide, 2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72 inches wide, 2.35c. to 2.45c.; No. 8 up to 60 inches wide, 2.10c. to 2.15c.; Flange quality, 25 cents extra.

**Sheets.**—Both Black and Galvanized Sheets are firm and mills that have been quoting 2.20c. on contracts with immediate specifications have withdrawn this quotation during the week. The minimum is now 2.25c. for Black Sheets, 28 gauge, accompanied by immediate specifications, and on future delivery better than 2.30c. cannot be done. All of the mills have a large tonnage of low priced business on their books and all of the large buyers in the West placed contracts for their future requirements a month ago. We quote the following prices: Blue Annealed, Nos. 9 and 10, 1.81½c. to 1.86½c.; Box Annealed, Nos. 18 and 20, 2.16½ to 2.21½c.; No. 27, 2.31½c. to 2.36½c.; No. 28, 2.41½c. to 2.46½c., with the customary differentials between gauges. Store prices are 2c. to 2.10c. for No. 10 Blue, 2.05c. to 2.15c. for No. 12 Box, 2.10c. to 2.20c. for No. 14, 2.20c. to 2.30c. for No. 16, 2.40c. to 2.50c. for Nos 18 and 20, 2.50c. for Nos. 22 and 24, 2.55c. to 2.65c. for No. 26, 2.60c. to 2.70c. for No. 27, 2.70c. to 2.80c. for No. 28, 2.95c. to 3.05c. for No. 30. Galvanized Sheets are quoted in car lots from mill at the following prices: No. 10, 2.36½c. to 2.41½c.; Nos. 17 to 21, 2.71½c. to 2.76½c.; No. 27, 3.26½c. to 3.31½c.; No. 28, 3.46½c. to 3.51½c. Store prices on Galvanized Sheets are firmer than for same time and high prices are being demanded for sizes difficult to obtain. Prices are as follows: Nos. 10, 12 and 14, 3.10c. to 3.20c.; Nos. 16 to 20, 2.90c. to 3c.; Nos. 22 to 24, 3c. to 3.15c.; No. 26, 3.20c. to 3.35c.; No. 27, 3.40c. to 3.55c.; No. 28, 3.60c. to 3.75c.; No. 30, 4.85c. to 4.95c.

**Bars.**—The leading interest has advanced Iron Bars to a basis of 1.80c., although outside mills are quoting 1.75c. and it is possible that 1.70c. could be done on a very desirable tonnage. The demand is heavy and considerable buying is expected in the near future to cover car requirements. The three largest producers of Steel Bars in the West are practically out of the market until next February on Agricultural Shapes. On small lots for early delivery some of the mills are securing premiums of \$2 a ton, but this is by no means general. We revise quotations as follows: Iron Bars, 1.75c. to 1.80c.; Steel Bars, 1.60½c., both half extras; Hoops, 1.91½c., extras as per Hoop card; Bands, 1.66½c., as per Steel card; Soft Steel Angles and Shapes, 1.76½c., half extras, and Hard Steel Angles and Bars at about 10c. below the price of Soft Steel. In store prices Steel Bars and Bands are being held at a minimum of 1.85c., base, half extras; Steel Angles and Shapes, 1.95c., half extras, and Soft Steel Hoops, 2.20c., full extras, with 5c. to 10c. higher



than the minimum prices named for small quantities from store.

**Merchant Steel.**—On practically all lines of Merchant Material Eastern mills are booked through February. On material for immediate delivery premiums are already being asked, but on deferred shipments the following quotations prevail: Planished or Smooth Finished is unchanged at 1.70c., base, Pittsburgh, and Iron finish up to  $1\frac{1}{2} \times \frac{1}{2}$  inch is 1.65c., base, Pittsburgh; Iron finish  $1\frac{1}{2} \times \frac{1}{2}$  inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows:  $\frac{3}{4}$ ,  $\frac{7}{8}$  and 1 inch, 2c., Pittsburgh, and  $1\frac{1}{8}$ -inch and larger, 1.90c., Pittsburgh. Other quotations remain unchanged, as follows: Smooth Finished Machinery Steel, 1.91 $\frac{1}{2}$ c.; Smooth Finished Tire, 1.86 $\frac{1}{2}$ c.; Flat Sleigh Shoe, 1.71 $\frac{1}{2}$ c.; Concave and Convex Sleigh Shoe, 1.86 $\frac{1}{2}$ c.; Cutter Shoe, 2.40c.; Toe Calk Steel, 2.21 $\frac{1}{2}$ c.; Railway Spring, 1.86 $\frac{1}{2}$ c.; Crucible Tool Steel, 6 $\frac{1}{2}$ c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting, 50 per cent. discount on car lots and 45 per cent. in less than car lots, in base territory.

**Merchant Pipe.**—The Merchant Pipe trade is seasonably quiet and the revised discounts announced last week are being strictly adhered to. The large jobbing interests throughout the West covered their pipe requirements for future delivery during the past few weeks and the buying from store continues good on account of the mild weather prevailing throughout the entire West. Current discounts to consumers from mill on Black Steel Pipe are 78.35 per cent. on the base sizes,  $\frac{3}{4}$  to 6 inches, and Galvanized, 68.35 per cent. Iron Pipe is quoted from  $1\frac{1}{2}$  to 2 points higher. From store in small lots Chicago jobbers are quoting 76 $\frac{1}{2}$  to 77 per cent. on Black Steel Pipe,  $\frac{3}{4}$  to 6 inches.

**Boiler Tubes.**—The demand for Boiler Tubes continues heavy, local jobbers reporting considerable buying on the part of the job boiler shops in the West. Mills have comfortable tonnage on their books and quotations are well maintained. During the week a rearrangement of the extras on long lengths was announced. Official discounts, f.o.b. Chicago, in car lots, are as follows: Steel Tubes, 62.35; Iron, 51.35; Seamless, 50.35. Store prices are unchanged as follows:

	Steel.	Iron.	Seamless.
1 to $1\frac{1}{2}$ inches .....	40	35	42 $\frac{1}{2}$
$1\frac{1}{2}$ to $2\frac{1}{4}$ inches.....	50	35	35
$2\frac{1}{4}$ inches.....	52 $\frac{1}{2}$	35	30
$\frac{3}{4}$ to 5 inches.....	60	47 $\frac{1}{2}$	42 $\frac{1}{2}$
6 inches and larger.....	50	35	..

**Cast Iron Pipe.**—This week Portland, Ore., closes for 700 tons of miscellaneous sizes, with an option on 3500 tons additional, which expires on November 6. Current business for early delivery is heavy, but on the smaller sizes deliveries cannot be made in less than 30 days. On current business prices are unchanged, as follows, f.o.b. Chicago, per net ton: Water Pipe, 4-inch, \$30; 6, 8, 10 and 12 inch, \$29; over 12-inch, \$28, with \$1 extra for Gas Pipe. Very large municipal contracts are placed on a somewhat lower basis.

**Coke.**—Strictly Connellsville Foundry Coke for prompt delivery has advanced to \$3 at the ovens, equivalent to \$5.65, Chicago. Wise County Coke is held at \$3.25 at the ovens, or \$5.50, Chicago, although some tonnage is offered at about 25c. less, which was purchased speculatively earlier in the year. Most of the large foundries in the West have their requirements covered through the remainder of the year and through the first quarter of next year, but the car shortage, already affecting Eastern Coke fields, has made deliveries uncertain, and on occasional carload lots \$3 is readily secured. There is practically no demand for Furnace Coke, all of the Western furnaces having provided for their needs when prices were low.

**Old Material.**—The upward movement of the market has temporarily been checked, and a few selling interests are of the opinion that slightly lower prices will prevail for a time at least, but they do not look for any steady decline on account of the general strength of the Iron and Steel market. The recent purchases of the American Car & Foundry Company, aggregating 8000 tons, the bulk of which was Wrought Scrap, had much to do with the sharp advance in prices in the last few weeks. Within the past few days material has been offered more freely by producing interests, and it is believed that the railroad lists in the near future will show increased offerings. A large amount of Cast Scrap has come into the market and prices are consequently off 50c. a ton. The Great Northern, Chicago, Milwaukee & St. Paul and Northern Pacific have new lists out this week covering a miscellaneous lot of material aggregating 8000 tons. The range of prices paid by large consumers to producers and dealers in carloads, f.o.b. Chicago, is as follows:

Old Iron Rails.....	\$22.00 to \$22.50
Old Steel Rails, 4 feet and over.....	15.50 to 16.00
Old Steel Rails, less than 4 feet.....	14.50 to 15.00
Heavy Relaying Rails, subject to inspection.....	26.50 to 27.00
Old Car Wheels.....	16.00 to 16.50
Heavy Melting Steel Scrap.....	14.50 to 15.00
Frogs, Switches and Guards.....	14.50 to 15.00
Mixed Steel.....	11.50 to 12.00

The following quotations are per net ton:

Iron Fish Plates.....	\$18.50 to \$19.00
Iron Car Axles.....	23.50 to 24.00
Steel Car Axles.....	17.50 to 18.00
No. 1 Railroad Wrought.....	17.00 to 17.50
No. 2 Railroad Wrought.....	16.00 to 16.50
Locomotive Tires, smooth.....	14.25 to 14.50
Railway Springs.....	14.00 to 14.50
No. 1 Dealers' Forge.....	14.00 to 14.50
Wrought Pipes and Flues.....	12.00 to 12.50
No. 1 Cut Bushing.....	12.00 to 12.50
Iron Axle Turnings.....	11.50 to 11.75
Soft Steel Axle Turnings.....	11.00 to 11.50
Machine Shop Turnings.....	11.00 to 11.50
Cast Borings.....	9.00 to 9.25
Mixed Borings, &c.....	9.00 to 9.25
No. 1 Mill.....	10.00 to 10.50
Country Sheet.....	8.50 to 9.00
No. 1 Boilers, cut to Sheets and Rings.....	11.75 to 12.25
No. 1 Cast Scrap.....	13.50 to 14.00
Stove Plate and Light Cast Scrap.....	11.50 to 12.00
Railroad Malleable.....	14.25 to 14.50
Agricultural Malleable.....	13.25 to 13.75

## Philadelphia.

REAL ESTATE TRUST BUILDING, October 10, 1905.

The Iron and Steel markets have gained additional strength since last week and prices are in most cases a shade dearer. The demand for Pig Iron is perhaps not quite as rampant as it has been, but it is of a most substantial character, and so well distributed that all lines appear to be working in unison. First in point of activity was Structural Material, then came Pig Iron, then Billets, then Plates and Bars, and now everything is up to the handle, including Sheets and all the lighter materials. This uniformity is specially gratifying, showing as it does the wider reaching character of the business improvement. Moreover, it is an earnest of continued activity for a long period to come and should dispel all fears that we are going too fast, or that it is too good to last. There never was a time when the business situation was stronger than it is to-day. Not only is the demand bound to be large, but there is a fair chance that most of the business will be done at a good profit, and with a larger output than ever before. The result to manufacturers should be eminently satisfactory. As far as can be seen, the essentials for a large volume of business are such as can be depended upon as well as a fair margin for profit, combined with a permanency which in former periods of prosperity has not been as sustained as was usually looked for at the time, although during the past five years it is quite clear that even in normal times the advance in consuming capacity has nearly doubled.

**Pig Iron.**—The demand has been very good the past week, but as the immediate requirements of buyers have been covered there is a more settled feeling than there was during the several preceding weeks. There is no loss of confidence, however, and it is pretty generally recognized that prices will work higher, but if buyers are not too urgent they will probably come out better than they would if they rushed things. A great deal of Iron will be wanted, and buyers stand ready to take large lots whenever they can be had on reasonably favorable terms, but makers are so well sold up that they prefer holding off rather than accept business at last week's prices. The somewhat smaller business of the past few days is therefore not due to less favorable conditions, but to a desire to study the ground before making further commitments, and this applies to buyers as well as to sellers. The final outcome will probably be a further advance in prices; to what extent it is impossible to say, but it will depend on buyers more than anything else. If they take things calmly and will not be too anxious for large lots, \$1 or \$2 more ought to hold Pig Iron, but if they insist upon covering for three to six months more than they have already done there is no saying where prices would go. Sales since Monday have been at higher prices than were quoted last week, and it is by no means certain that to-day's prices will hold good for any length of time. Sales have been on the basis of \$17.50 for No. 2 X Foundry, \$15.75 to \$16 for Gray Forge and \$17 for Basic. In regard to the latter it may be said that to-day's inside quotations are \$17.25 to \$17.50, although some quote \$17.75; a limited amount of business might be accepted at the first named figures, but it would depend on circumstances. Further inquiries are in the market and it is not unlikely that sales will be made as above named, although, as we said before, the feeling is extremely sensitive and the belief in higher prices is very strong. For the present, however, we quote as follows for city and nearby deliveries:

No. 1 X Foundry.....	\$18.00 to \$18.25
No. 2 X Foundry.....	17.25 to 17.50
No. 2 Plain.....	16.75 to 17.00
No. 2 X Southern.....	16.50 to 17.00
Standard Gray Forge.....	15.75 to 16.00
Basic.....	17.25 to 17.50
Low Phosphorus.....	21.50 to 22.50

**Ferromanganese.**—There is no change in the situation, prompt shipments being quite impossible at the present time. For next year's shipments \$54 to \$55, c.i.f., are nominal quotations, but no business has been reported recently.

**Steel.**—The demand is very large and prompt shipments are at a decided premium. When dates can be arranged quotations are from \$28 to \$29 for ordinary Open Hearth Steel,



but mills are crowded with work and deliveries are urgently called for.

**Muck Bars.**—There is not much demand, but as orders for a considerable tonnage of Skelp have been placed mills are expecting a demand for Muck Iron. Prices are nominally \$27 to \$28, f.o.b. cars, seller's mill, and business could probably be done at a medium figure.

**Plates.**—The demand for Plates is fully in line with expectations, while prospects for the more distant future are of the most encouraging character. It is indeed difficult to see how all the demand can be met, in view of the immense consumption which is only just beginning to develop. Besides the miscellaneous trade, which is in itself an important factor, the demand from the railways will require an unprecedented tonnage of Plates during the fall and winter months. The capacity for production has, of course, grown enormously, but it will be taxed to the uttermost, and even then it will be fortunate if they can keep up with the demand. For the present prices are unchanged as given herewith, but it would be unreasonable to expect them to remain so when everything else is advancing.

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel.....	1.73½	1.78½
Flange or Boiler Steel.....	1.83½	1.88½
Marine, A. B. M. A. and Commercial		
Fire Box Steel.....	1.93½	1.98½
Still Bottom Steel.....	2.03½	2.08½
Locomotive Fire Box Steel.....	2.23½	2.28½
The above are base prices for ¼-inch and heavier. The following extras apply:		
3-16-inch thick.....	\$0.10	pounds extra.
Nos. 7 and 8, B. W. G.....	.15	"
No. 9, B. W. G.....	.25	"
Plates over 100 to 110 inches.....	.05	"
Plates over 110 to 115 inches.....	.10	"
Plates over 115 to 120 inches.....	.15	"
Plates over 120 to 125 inches.....	.25	"
Plates over 125 to 130 inches.....	.50	"
Plates over 130 inches.....	1.00	"

**Structural Material.**—The record of activity and of difficulty in securing deliveries continues without abatement, and prospects for easier conditions are nowhere in sight at the present time. We continue the usual quotations, but it is hardly possible to get the promise of anything for this year's shipments, unless by paying special rates for the accommodation: Beams and Channels up to 15 inches are nominally quoted at 1.83½c. to 2c., and a tenth more for large sizes, and about the same schedule for Angles.

**Bars.**—The Bar trade is working toward higher prices, and while an occasional order may be taken at around 1.75c. the usual figure is 1.83½c. There is plenty of demand and mills could easily fill up with work for forward delivery, but they are disposed to insist that specifications should be guaranteed on definite dates, so that they can feel sure of steady employment all the way through. Orders for Skelp Iron may help the Bar trade, several thousand tons having been taken within the past few days. On the whole, the outlook is brighter than it has been for time out of mind, both as regards Iron and Steel Bars, which are equally quoted within the range of 1.73½c. to 1.83½c.

**Sheets.**—A decided improvement is noted in the demand for Sheets, and while prices are not quotably higher they are much stronger, as follows: 18 to 20 gauge, 2.30c.; 22 to 24 gauge, 2.40c.; 25 and 26 gauge, 2.50c.; 27 gauge, 2.60c., and 28 gauge, 2.70c.

**Old Material.**—Steel Scrap is stronger and easily commands \$16.25 to \$16.50. Some holders ask as high as \$18, but mills are paying the figures first named, and may pay more if Pig Iron advances. In the meanwhile the awards from the Pennsylvania and Reading railways are awaited with much interest, being expected to establish values more definitely than they have been of late, as for quite a while past dealers have outbid consumers on nearly all the large lots that came on the market. Rolling Mill Scrap is a little irregular and quotations somewhat uncertain, but the range would be about as follows, for deliveries in buyers' yards:

Scrap Steel Rails.....	\$16.50 to \$16.75
No. 1 Steel Scrap.....	16.25 to 16.50
Low Phosphorus Scrap.....	21.00 to 22.00
Old Steel Axles.....	21.00 to 21.50
Old Iron Axles.....	25.00 to 26.00
Old Iron Rails.....	22.50 to 23.50
Old Car Wheels.....	16.00 to 16.50
Choice Scrap, R. R. No. 1 Wrought.....	21.50 to 22.50
No. 1 Yard Scrap.....	18.50 to 19.00
Long and Short.....	17.50 to 18.00
Machinery Scrap.....	15.50 to 16.00
Wrought Iron Pipe.....	16.00 to 16.25
No. 1 Forge Fire Scrap.....	15.00 to 15.50
No. 2 Light Ordinary.....	12.00 to 12.50
Wrought Turnings.....	14.00 to 14.50
Axle Turnings, Choice Heavy.....	14.75 to 15.00
Cast Borings.....	9.75 to 10.00
Stove Plates.....	12.50 to 13.00
Grate Bars.....	12.50 to 12.75

The Brooklyn Rapid Transit Company, Brooklyn, N. Y., has sold to Henry A. Hiltner's Sons, Philadelphia, Pa., 43 locomotives which it formerly used on its elevated lines. The price is understood to be \$1017 for each locomotive.

## Pittsburgh.

PARK BUILDING, October 11, 1905 (By Telegraph).

**Pig Iron.**—The market on Bessemer and Basic Iron in the past week has been quiet, being a natural reaction from the extraordinary activity of the past several weeks. Most large consumers are covered, and while it is generally expected that the United States Steel Corporation will buy upward of 40,000 tons of Bessemer for October delivery, nothing has yet been done in the matter. Prices are firm at \$15.50, Valley furnace, and the belief is general that the market will go to \$16 before January 1. We note a sale of 1000 tons of Bessemer at \$15.50, Valley. The Standard Sanitary Mfg. Company of this city has bought about 11,000 tons of Foundry Iron in the past week. Of this amount 4000 tons was Southern No. 2 Foundry for its Louisville works, for which it paid \$12.50, Birmingham. The other 7000 tons was for its Allegheny, New Brighton and Bridgewater works and was nearly all Northern No. 2 and No. 3. There was a wide range in the prices quoted on the Foundry Iron, the company buying some of the No. 2 as low as about \$15 at furnace, while for other special brands of Foundry it paid up to \$15.50 and \$15.75 at furnace. We quote Northern No. 2 Foundry at \$15.25 to \$15.50, Valley furnace. There is some inquiry for Forge Iron, and Northern brands are held at \$14.75 to \$15, Valley furnace.

**Steel.**—The Steel market continues very strong, prompt Billets and Sheet and Tin Bars being hard to obtain and commanding relatively high prices. One leading Steel plant has transferred a large tonnage of Sheet and Tin Bars to another interest, desiring to use its entire tonnage of Steel in its own finishing mills. We quote Bessemer and Open Hearth Billets at \$25, and Sheet and Tin Bars, in random lengths, at \$26, maker's mill, for October delivery, this being the price fixed to Sheet and Tin Plate mills that have open contracts. We quote Forging Billets at \$29 and upward, depending on specifications.

**Railroad Spikes.**—We note a very active demand and the market is slightly higher. We quote \$1.80 per 100 lbs., maker's mill.

**Chain Rods.**—The leading makers have reduced prices on Open Hearth Chain Rods \$2 a ton, and we now quote these at \$33, maker's mill.

(By Mail.)

General conditions, except in Sheet and Tin Plate, are very satisfactory, and all indications point to a very busy winter among the mills. In fact, the large interests, such as the Carnegie, Jones & Laughlin and Cambria Steel companies and most of the underlying companies of the United States Steel Corporation, are practically sold up on everything they make for the balance of this year and well into next year. There never was a time in the history of the Iron trade when the finishing mills had as much tonnage on their books, excepting in Sheets and Tin Plates, as they have at present. In Plates for Steel car purposes some of the mills are sold up for the next eight to ten months and one leading Plate mill is reported to be booked up practically full to October 1, next year. Buying of Bessemer and Basic Iron has been rather light in the past week, but this is due to the fact that the large interests are pretty well covered. At the same time we can note that two large Steel interests are figuring on the purchase of large blocks of Bessemer and Basic Iron for the first six months of next year. Bessemer and Basic Iron are firm at \$15.50, Valley furnace, and we note sales of 8000 to 10,000 tons for delivery this year at this price. There has also been a considerable tonnage sold for the first quarter of next year at \$15.50 at furnace. There has been some large buying of Foundry Iron in the past week, one local consumer placing contracts yesterday for 7000 tons. Northern No. 2 Foundry is very firm at \$15.25 to \$15.50, Valley furnace, some sellers holding firm for the higher price. There is a moderate inquiry for Forge Iron and the market on Northern brands is firm at \$14.75 to \$15, Valley furnace. It is very hard to get deliveries of Billets and Sheet Bars by concerns that are not covered by contracts and that have no regular source of supply. In fact, the Carnegie Steel Company seems to be the only maker in position to furnish Sheet and Tin Bars, the others either being sold up or needing their entire output of Steel for Finished products. Prices of Sheet and Tin Bars in random lengths to consumers having regular contracts have been fixed at \$26, Pittsburgh, for October delivery. Mills that have to pay this price for Bars and then sell Tin Plate at \$3.30 a box and Sheets at 2.25c. for No. 28 or lower are certainly up against a pretty hard proposition and it is doubtful whether they can come out whole. The demand for all kinds of Finished Iron and Steel is unusually heavy, with the exception of Sheets and Tin Plate, but the demand for the former has improved very materially in the last two or three weeks, though prices continue low. The demand for Furnace and

Foundry Coke is very active, contracts for Furnace Coke having been made as high as \$2.65 a ton at oven for next year. The Scrap trade is also active, with the tendency in prices decidedly upward.

**Ferromanganese.**—For prompt shipment Ferro continues very scarce, and for this and next month delivery is held at \$55, Pittsburgh. For delivery through first half of next year about \$51 is quoted for foreign 80 per cent. Ferro. Most of the large consumers are covered for some time ahead, and demand is mostly for small lots and prompt shipment.

**Steel Rails.**—It is stated that 100,000 tons of the New York Central order have been placed, about equally divided between the United States Steel Corporation and the Lackawanna Steel Company. The Illinois Steel Company has booked some tonnage for delivery in the last quarter of 1906 and is said to be fully sold to October 1 in that year. The Lake Shore has placed 60,000 tons, the Northern Pacific 30,000 tons, and other large contracts are pending. The total already entered by the Rail mills for next year is given as about 1,500,000 tons. We quote \$28 at mill for standard sections. The demand for Light Rails is quite active and prices are very firm. The new Light Rail mill at the Edgar Thomson Works of the Carnegie Steel Company, known as No. 3, is practically finished and will be tested this week. The mill will be used for rerolling seconds into light sections and will have a capacity of over 1000 tons a day. We quote: 8-lb., \$36 to \$37; 10-lb., \$32 to \$33; 12-lb., \$29 to \$30; 16-lb., \$27 to \$28; 25-lb. to 45-lb., \$26 to \$26.50, all f.o.b. cars maker's mill. A large tonnage in Light Rails has been placed recently.

**Rods.**—There is an active inquiry for Rods, but the available supply is very limited. We quote Bessemer and Open Hearth Rods at \$31.50 to \$32, maker's mill. Open Hearth Chain Rods are very firm at \$35, maker's mill.

**Muck Bar.**—The market is quite firm, and there is a good deal of inquiry. We quote best grades of Muck Bar made from all Pig Iron at \$28, Pittsburgh.

**Skelp.**—The Skelp mills are very busy on contracts and prompt deliveries of both Steel and Iron Skelp are hard to obtain. Prices are firm, and for ordinary widths we quote: Grooved Steel Skelp, 1.50c. to 1.55c.; Open Hearth, 1.55c. to 1.60c.; Sheared, \$1 advance; Grooved Iron Skelp, 1.55c. to 1.60c.; Sheared, 1.65c. to 1.70c., maker's mill.

**Plates.**—Tonnage in Plates for Steel car purposes continues exceedingly heavy and some of the leading mills are practically sold up into next summer. Very large additional orders for Steel cars are pending and the present active condition of the Plate mills seems absolutely assured for the next six months or longer. In view of the very active demand and high prices of Billets an advance in the price of Plates this month is generally anticipated. The market is exceedingly firm and we quote: Tank Plates,  $\frac{1}{4}$  inch thick,  $6\frac{1}{4}$  up to 100 inches in width, 1.60c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than $\frac{1}{4}$ -inch to and including 3-16-	
inch Plates on thin edge.....	\$0.10
Gauges Nos. 7 and 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 inches.....	.05
Plates over 110 to 115 inches.....	.10
Plates over 115 to 120 inches.....	.15
Plates over 120 to 125 inches.....	.25
Plates over 125 to 130 inches.....	.50
Plates over 130 inches.....	1.00
All sketches (excepting straight taper Plates vary-	
ing not more than 4 inches in width at ends,	
narrowest end being not less than 30 inches)....	.10
Complete Circles.....	.20
Boiler and Flange Steel Plates.....	.20
Marine, "A. B. M. A." and ordinary Fire Box	
Steel Plates.....	.20
Still Bottom Steel.....	.30
Locomotive Fire Box Steel.....	.50
Shell Grade of Steel is abandoned.	

**TERMS.**—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of  $\frac{1}{2}$  of 1 per cent. is allowable. Pacific Coast base, 1.40c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

**Structural Material.**—There is a steady flow of orders to the Structural mills and leading interests like the American Bridge Company, McClintic-Marshall and others are filled up so far ahead that they are not promising new work inside of six months from date of contract. No large work has recently been placed in this city, but several important jobs are in sight, among these being the Union National Bank Building, a projected 20-story structure, which if put through will take about 4000 tons. Deliveries from the mills are still very unsatisfactory, especially on Open Hearth stock, on which they are three to four months behind or longer. The market is very firm and we quote: Beams and Channels, up to 15-inch, 1.70c.; over 15-inch, 1.80c.; Angles, 3 x 2 x  $\frac{1}{4}$  inch thick up to 6 x 6 inches, 1.70c.; Angles, 8 x 8 and 7 x  $3\frac{1}{2}$  inches, 1.80c.; Zees, 3-inch and larger,

1.70c.; Tees, 3-inch and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

**Sheets.**—Tonnage in Sheets is steadily increasing, but as yet there is no improvement in prices, which are very low. The American Sheet & Tin Plate Company has started up its Vandergrift works in full, which contains 29 hot mills. Part of this plant has been idle for some little time while some extensive repairs were being made. This interest is now operating 92 per cent. of its Sheet capacity, running all its plants full with the exception of the Struthers and Midland works. The outside Sheet mills are also running reasonably full. The Sheet trade, therefore, as far as demand is concerned, is very much better. In view of the high prices of Sheet Bars, now \$26 or higher, and the greatly increased demand for Sheets, it would not be surprising if an advance in prices was made before long, but nothing official has been given out. We quote: Black Sheets, box annealed, one pass through cold rolls, Nos. 22 and 24 gauge, 2.05c.; Nos. 25 and 26, 2.10c.; No. 27, 2.15c.; No. 28, 2.25c.; No. 29, 2.40c., and No. 30 gauge, 2.50c. Galvanized Sheets are firm in price, and we quote: Nos. 22 and 24, 2.70c.; Nos. 25 and 26, 2.90c.; No. 27, 3.10c.; No. 28, 3.30c.; No. 29, 3.55c.; No. 30, 3.80c. We quote No. 28 Gauge Painted Roofing Sheets at \$1.60 per square, and Galvanized Roofing Sheets, No. 28 gauge, at \$2.80 for  $2\frac{1}{2}$ -inch corrugation. Jobbers charge the usual advances over these prices for small lots from store.

**Iron and Steel Bars.**—A good deal of tonnage is being placed in both Iron and Steel Bars, but at the same time it is true that most large consumers have pretty well covered their requirements through first half of next year. It is practically certain that prices on Steel Bars will be advanced \$2 a ton within a week or two. The mills rolling both Iron and Steel Bars are filled up for some months ahead and prompt deliveries are very hard to obtain. We quote Refined Iron Bars at 1.70c., Youngstown, or 1.74 $\frac{1}{2}$ c., Pittsburgh. We quote Steel Bars at 1.50c., base, half extras, for carloads and larger lots.

**Hoops and Bands.**—Leading consumers are covered by contracts made before the recent advance in prices and on which they are specifying very freely. However, a fair amount of new tonnage is being placed and official prices are being rigidly held. We quote Steel Hoops at 1.75c. and Bands to be used for cooage purposes at 1.75c., the latter carrying full Hoop and Band extras. Bands for other than cooage purposes are 1.50c., base, half extras, as per Standard Steel card. Above prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery.

**Tin Plate.**—Conditions in the Tin Plate trade are decidedly unsatisfactory to the mills that have to buy their Tin Bars in the open market and pay the high prices that are now ruling for them. We understand that on contracts the price of Tin Bars in random lengths for October delivery will be \$26, Pittsburgh, and as the base price of Tin Plate is now \$3.30 per box it is practically impossible for the average Tin Plate mill to run and make a profit. The leading interest is said to be operating 54 per cent. of its capacity, while the outside mills are running to about half capacity, and in some cases less. Prices of Tin Plate have been very uneven for some time, but seem to have settled down to the basis of \$3.30 per base box, terms 30 days, less 2 per cent. off for cash in 10 days. Within the past month two different reports have been circulated that the American Sheet & Tin Plate Company had taken two contracts from the Standard Oil Company for 1,000,000 boxes each. These reports are absolutely untrue and represent more Tin Plate than the Standard Oil Company would use in two years or more.

**Merchant Steel.**—While large consumers are pretty well covered by contracts up to July of next year a good deal of current business is being placed and the mills are filled up for some months ahead. The excellent report just issued by the Crucible Steel Company of America, showing its operations for the past year, reflects the active conditions existing in the Merchant Steel trade through all of this year. Extras on Steel Tires have been advanced and these are now as follows: Planished or Smooth Finished is unchanged at 1.70c., base, Pittsburgh, and Iron finish up to  $1\frac{1}{2}$  x  $\frac{1}{2}$  inch is 1.65c., base, Pittsburgh; Iron finish,  $1\frac{1}{2}$  x  $1\frac{1}{2}$  inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows:  $\frac{3}{4}$ ,  $\frac{1}{2}$  and 1 inch, 2c., Pittsburgh, and  $1\frac{1}{2}$ -inch and larger, 1.90c., Pittsburgh. For other grades we quote: Smooth Finished Tire, 1.70c.; Toe Calk Steel, 2c. to 2.05c.; Railway Spring Steel, 1.65c. to 1.70c.; Cutter Shoes, 2.20c. to 2.25c.; Flat Sleigh Shoe, 1.50c. to 1.55c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. The demand for Shafting is quite heavy, which we quote at 50 per cent. discount in carloads and 45 per cent. in less than carloads, delivered in base territory.

**Railroad Spikes.**—We note a continued active demand



and prices are very firm. We quote Railroad Spikes at \$1.75 per 100 lbs., maker's mill.

**Spelter.**—Prices have again advanced and the tone of the market is firmer than for some time. Prime Western grades of Spelter are held to-day at 5.85c. to 5.90c., St. Louis, equal to 5.97½c. and 6.02½c., Pittsburgh.

**Merchant Pipe.**—General conditions in the Pipe trade are more satisfactory than for some time as regards tonnage, but as yet there is no betterment in prices. Demand is general from all sections of the country and is of an urgent nature, indicating that stocks held by jobbers are not heavy. Discounts on Merchant Pipe are as follows:

Merchant Pipe.				Jobbers, carloads.				Consumers, carloads.			
				Steel.				Iron.			
				Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
¾ and ¾ inch.....	72	56	69½	53½	71	55	68½	52½	60½	56½	61½
¾ and ½ inch.....	76	64	73½	61½	75	63	72½	60½	67½	64½	69½
¾ to 6 inches.....	80	70	78	68	79	69	77	67	74	64	71
7 to 12 inches.....	75	60	73	57½	74	59	72	56½	63½	59½	66½
Extra strong, plain ends:											
¾ to ¾ inch.....	65	53	62½	50½	64	52	61½	49½	56½	53½	59½
¾ to 4 inches.....	72	60	69½	57½	71	59	68½	56½	63½	59½	66½
4½ to 8 inches.....	68	56	65½	53½	67	55	64½	52½	59½	56½	62½
Double extra strong, plain ends:											
¾ to 8 inches.....	61	50	58½	47½	60	49	57½	46½	53½	49½	56½

**Boiler Tubes.**—The demand continues heavy, the mills being unable to catch up on deliveries, on which they are two or three months behind. On Locomotive Tubes the tonnage is particularly large and promises to be very heavy for some months to come. Official discounts are being rigidly held and are as follows:

Boiler Tubes.				Iron.		Steel.	
1 to 1½ inches.....				41	44	41	44
1½ to 2¼ inches.....				41	44	41	44
2½ inches.....				46	58	46	58
2½ to 5 inches.....				53	64	53	64
6 to 13 inches.....				41	56	41	56

**Coke.**—Conditions in the Coke trade are more active than for some months and the question of a supply for some of the blast furnaces for next year that are not covered by contracts is a serious one. For strictly Connellsville Furnace Coke for delivery over the first half of next year \$2.50 to \$2.60 a ton at oven is freely offered, and it is said that some producers who have a limited amount to spare are holding it at \$2.75 a ton at oven. Connellsville 72-hour Foundry Coke is held at \$2.75 to \$3 a ton at oven. The output last week in the Upper and Lower Connellsville regions amounted to about 360,000 tons, the largest output in any one week this year. Coke made outside the Connellsville region and in the West Virginia district can be had at somewhat lower prices than above.

**Iron and Steel Scrap.**—There is a very active demand for practically all kinds of Scrap and prices are very firm. Some dealers are indifferent about selling, as they believe the market will be still higher. We quote Heavy Melting Scrap at \$16.50 in gross tons, and sales of 5000 tons or more are reported at this price: No. 1 Wrought Scrap is \$16.50; Cast Iron Borings, \$9 to \$9.50; Bundled Sheet Scrap, \$14.25 to \$14.50; Old Steel Rails, short pieces, \$16; long pieces, \$16.50; Machinery Cast Scrap, \$15, and Cast Steel Scrap, \$15.50, all in gross tons, f.o.b. Pittsburgh.

## Cincinnati.

FIFTH AND MAIN STS., October 11, 1905.—(By Telegraph.)

**Pig Iron.**—The market continues to show a strong front, and while sales made in this territory during the week have not been so general in their character and of the heavy tonnage that marked the several weeks preceding this has had no bad effect on conditions. There is, in fact, an exceedingly strong undertone in the market that may cause it to make a still further advance in the next few days. The report is that a number of both Southern and Northern furnaces have practically withdrawn from the market for the balance of this year and are making no great effort to contract for next year's delivery. It is said that several of the Southern furnaces reported to have withdrawn have advised their agents to report specific inquiries, which in some instances are taken care of, but at an advance over prevailing prices. Our quotations on Southern Iron last week showed that No. 2 was apparently strong at \$12.25, Birmingham, but this must be raised 25c. this week, as from all we can learn \$12.50, Birmingham, is well established and represents both the maximum and minimum figure. It is true that some furnaces are asking more than this, but we have no record of any sales having been thus made. Northern brands have also moved upward, No. 2 to-day ranging from \$15.25 to \$15.50, furnace. Gray Forge is apparently in plentiful supply, and rules rather strong at \$11, Birmingham. We have report of one sale made of mixed grades of Southern Iron of 3200 tons, Louisville delivery, on a basis of \$12.50, Birmingham, for first quarter next year. Summing it all up, it looks as though a large percentage of

consumers were amply supplied for the rest of this year, excepting possibly those who seldom anticipate and merely buy for immediate requirements, and as the furnaces are unwilling to look forward into next year to any great extent, with this year's output practically all sold, we may look for somewhat higher prices before the close of the present year. Freight rates from Hanging Rock district to Cincinnati are \$1.15, and from Birmingham \$2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$15.75
Southern Coke, No. 2.....	15.25
Southern Coke, No. 3.....	14.75
Southern Coke, No. 4.....	14.25
Southern Coke, No. 1 Soft.....	15.75
Southern Coke, No. 2 Soft.....	15.25
Southern Coke, Gray Forge.....	\$13.75 to 14.00
Southern Coke, Mottled.....	13.75 to 14.00
Ohio Silvery, No. 1.....	19.15 to 19.40
Lake Superior Coke, No. 1.....	16.90 to 17.15
Lake Superior Coke, No. 2.....	16.40 to 16.65
Lake Superior Coke, No. 3.....	15.90 to 16.15

### Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$18.75 to \$19.00
Lake Superior Car Wheel and Malleable.	18.25 to 18.50

**Coke.**—The market is strong, demand is enormous and actual consumption is very large. There is some hesitancy apparent on the part of selling agents in taking orders for fear that the necessary equipment cannot be secured to take care of contracts as demanded. We quote the best grades of West Virginia Foundry at from \$2.75 to \$3, and furnace grades at \$2.50, f.o.b. ovens.

**Finished Iron and Steel.**—There is no apparent decrease in the new business coming forward, and as the mills are said to be booked away into the future considerable delay is experienced in making deliveries. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.65c., with half extras; the same in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same in smaller lots, 1.85c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.83c.; Plates, ½-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.83c., in carload lots.

**Old Material.**—This market shows a firm tendency, with the demand larger and prices strong. Signs of improvement are reported, and several large sales have been made during the week. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, \$16 to \$16.50 per net ton; No. 1 Cast Scrap, \$13 to \$13.50 per net ton; Iron Rails, \$19 to \$20 per gross ton; Steel Rails, rolling mill lengths, \$14 to \$14.50 per gross ton; Relaying Rails, 56-lb. and upward, \$23.50 to \$24 per gross ton; Iron Axles, \$21.50 to \$22 per net ton; Car Wheels, \$15.50 to \$16 per gross ton; Heavy Melting Scrap, \$14 to \$14.50 per gross ton; Low Phosphorus Scrap, \$17.50 to \$18 per gross ton.

## Cleveland.

CLEVELAND, OHIO, October 10, 1905.

**Iron Ore.**—The statistics just given out show that the movement of Iron Ore down the lakes during September was 4,425,550 tons, against 4,006,442 tons for September, 1904. Shipments to October 1, 1905, were 25,473,606 tons, against 13,622,438 tons to the same date last year. The increase over last year to the first of this month was 11,851,168 tons. There has been a disposition on the part of the shippers to prod up the vessel owners to move contract material more rapidly. Some vessel firms are said to be behind with their contracts. This is taken as an indication that the shippers wish to rely less through the remainder of the year on wild tonnage; also that the movement through the remainder of the year will be moderately heavy. The demand for wild boats is not quite so keen now, although some are still used. Rates are 75c. from the head of the lakes, 70c. from Marquette and 60c. from Escanaba.

**Pig Iron.**—It is becoming evident that there is a small amount only of Foundry and Malleable Irons for sale in the remainder of this year. In fact, it is indicated that there is likely to be a shortage of Malleable before the year is out, with the result that prices are stronger. Two Northern Ohio furnaces are now out of blast, one of them to remain through October and the other to continue idle through the better part of November. Another prominent producer of Malleable has withdrawn from the market for the remainder of the year, even refusing to quote. Some sales of this Iron have been made at \$16 in the Valleys on delivery to be made through the first quarter of next year. Current prices are governed by the need of the consumer and the condition of the furnace, although it is said that \$15.50 in the Valleys is minimum. The same is true of Basic, which has been sold at prices ranging from \$15.50 in the Valleys to \$16. The contracts vary, those consumers faring best who have arrangements for specifications through the remainder of this year and the first quarter of next. In Foundry Iron the amount for sale for this year is limited and furnaces in the main are able



to command their own prices. The market, however, is uneven, due to the condition of the furnaces. One or two of the big producers are not comfortable as to orders as yet and are accepting the market price of \$15.50 in the Valleys for No. 2. Others are holding for \$16 in the Valleys. In a few instances contracts have been taken for first quarter and first half delivery at \$16 in the Valleys. The car shortage is strengthening the Coke situation. The best grades of Foundry Coke are now selling at \$3.25 as a minimum for the 72-hour product, with some sales as high as \$3.50. The best grades of Furnace Coke command \$2.75, at the oven.

**Finished Iron and Steel.**—The consumers of Sheets are beginning to contract at present prices, indicating an end to the weakness in that market. The advance in the price of Sheet and Tin Plate Bars and the reduction in the price of the finished product is believed to indicate keener future competition by the larger Sheet interests against the smaller producers. Some of the smaller mills are willing to take contracts on present prices, but others have withdrawn from the market, making the claim that no profit can be made at present prices. Some mills have withdrawn for the time being with the announced intention of closing. The business out of stock is not affected and has been good, on the old basis of 2.05c. for No. 1 Blue Annealed, 2.55c. for No. 28 one-pass cold rolled and 3.55c. for No. 28 Galvanized. In some quarters the special concessions made to get Pipe business for prompt shipment have been withdrawn and the old quotation applies. The weak spots in the market have not been entirely eliminated. In general the quotation is 71 off list, but 81 off list is heard of. This, however, is only to get business for quick shipment.

The demand for Billets and Sheet Bars is keen. One of the principal producing plants in this territory has been shifted to Rails, to remain in that trade through the remainder of the year and probably late into next year. The demand, however, has pushed the price up until a quotation of \$26 to \$27, Pittsburgh, is common, and some sales have been made at higher prices. The demand for Plates has been steady in this territory and in excess of the capacity of the mills, but the supply from Eastern producers has been a relief, and no premiums have yet been necessary. Shipments can be made by the Eastern mills within two weeks. The consumption has been very heavy and specifications against old contracts have been unusually strong. The Bar Iron trade is showing a steady improvement with an increasing shortage of material. Prices have strengthened under the buying, with most of the mills holding for 1.75c., Youngstown, although some material is still sold at 1.70c., Youngstown. Steel Bars are strong at 1.50c., Pittsburgh, for both Bessemer and Open Hearth, with an advance still being discussed. On Rails premiums are offered, but the buying is not large, the supply being small. The price holds at \$28 Pittsburgh.

**Old Material.**—Buying of Scrap has been heavy during the week and dealers are trying to boost prices, but are meeting with some resistance. For the time being old prices obtain, but are expected to hold only temporarily. The following represents the dealers' quotations, gross tons: Old Steel Rails, \$15.50 to \$16; Old Iron Rails, \$20 to \$21; Old Car Wheels, \$16; Heavy Melting Steel, \$15.50 to \$16. Net tons: Cast borings, \$9; No. 1 Busheling, \$14; No. 1 Railroad Wrought, \$16; Iron Car Axles, \$21 to \$22; No. 1 Cast, \$14 to \$14.50; Stove Plate, \$10.50 to \$11; Iron and Steel Turnings and Drillings, \$10.50 to \$11.

## New York.

NEW YORK, October 11, 1905.

**Pig Iron.**—The general foundry trade continues to take a considerable interest in the market and quite a number of sales ranging from 500 to 3500 tons each have been effected at rising prices. So far as we can learn, there has been no general covering movement as yet beyond the early part of next year, and a good deal of iron must still be bought. Buyers are willing to take further lots unless the price seems too far away. The furnace interests, uncertain as to how much costs will swell, are generally conservative. Prices have advanced further, and it should be noted that the lower quotations are made by comparatively few and may be withdrawn at any time. Among the larger sales made during the week was one lot of 7000 tons of No. 2 Plain, taken by a pipe founder. We quote: Northern Iron, at tidewater, for No. 1, \$17.75 to \$18, No. 2 Foundry, \$17.25 to \$17.75 and No. 2 Plain, \$16.50 to \$17. Southern Iron is quoted \$17 to \$17.50 for No. 1 and \$16.50 to \$16.75 for No. 2 Foundry.

**Steel Rails.**—The past week has been one of the record weeks in the present rail buying movement, in which the Western lines have for some time been conspicuous. We note an additional order for 45,000 tons placed by the Northern Pacific, making its total 80,000 tons. There have been closed also 35,000 tons for the Great Northern, 29,000 tons for the Minneapolis & St. Louis, 8000 tons for the Ocean Shore, 13,000 tons for the Kansas City, Mexico & Orient and 8000

tons for the Virginia & Carolina Coast Line. The Reading, Baltimore & Ohio, Chesapeake & Ohio and Duluth South Shore & Atlantic have taken smaller tonnages in addition to original orders. The Vanderbilt lines have given out a considerable share of the 160,000 tons they have for some time been scheduled to take, but still have some good contracts to place. Frog and crossing companies have bought 10,000 to 12,000 tons in the week.

**Structural Material.**—The amount of work on which bids have been made recently or on which there is figuring with a view to closing in the next three or four months is very heavy. Most of that which it is quite certain will be placed is for railroad bridges. A contract for 16,000 tons was closed by the Atchison, Topeka and Santa Fé Railroad with the American Bridge Company at the close of last week, and on Monday the same company was awarded the bridge over the Connecticut River at Saybrook, on the Shore Line division of the New York, New Haven & Hartford Railroad; about 7000 tons of Steel will be required. Pending orders from railroads amount to 60,000 tons additional, and the work in sight that is expected to come on order books in the latter part of the year or early in 1906 amounts to 140,000 or 150,000 tons. Work projected in New York that will mean a good aggregate of Structural Steel orders in the near future includes a mammoth office building on West street, in lower Manhattan; the Astor apartment hotel, calling for about 10,000 tons; the proposed office building adjoining the Trinity Building, on Broadway; and the Plaza Hotel. We quote at a premium on the official prices, making the market at tidewater on mill shipments as follows: Beams, Channels, Angles and Zees, 1.89½c. to 1.99½c.; Tees, 1.94½c. to 2.04½c.; Bulbs, Angles and Deck Beams, 1.99½c. to 2.09½c.

**Plates.**—Conditions in the Plate trade are steadily advancing toward such an accumulation of business at the mills as may be expected to lead to higher prices if continued for any length of time. Local sales agents are receiving quite a fair number of orders. Quotations at tidewater for shipment from mills are as follows: Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine Plates, 1.94½c. to 2.04½c.; Fire Box Plates, 2.04½c. to 2.60c., according to specifications.

**Bars.**—The demand for Bars is active, both for Iron and Steel. While Steel Bars continue to be quoted on the basis of 1.50c., Pittsburgh, for forward delivery, which is equal to 1.64½c., tidewater, premiums of \$1 per ton or more are paid for prompt shipment. Bar Iron is again stronger, and while a few mills will take a limited amount of business at 1.60c., Pittsburgh, or 1.74½c., tidewater, the leading mills are firmly holding at \$2 per ton higher, or 1.84½c., tidewater.

**Cast Iron Pipe.**—Business maintains a lively gait, the volume being unprecedented for the season. The demand covers all sizes except the largest diameters, for which orders could hardly be expected so late in October. Prices are at \$27.50 per net ton for carload lots of 6-inch, at tidewater.

**Old Material.**—Old Steel Rails and Heavy Steel Scrap are the subject of very active inquiry. Over 10,000 tons of this class of material has been the subject of negotiation, but consumers are still unwilling to pay the prices asked by dealers, although the former have somewhat advanced their bids over those made last week. Up to the present, practically no sales have been made in this territory so far as known. A sale of 500 tons of rerolling Steel Rails is reported at \$17.50, delivered at buyer's mill. Cast Scrap continues very strong, with sales reported amounting to 3000 tons of Heavy Cast and 2000 tons of Stove Plate at full prices. A good volume of business is reported in Railroad Wrought and Busheling Material, such as Pipe or good Light Iron. Sales are reported of 1000 tons of Wrought Pipe, and it is believed that practically all the stock of this kind in this market has been disposed of. Car Wheels are very strong with a good demand, and there appears to be a scarcity at present. Hammered Iron Axles are in brisk request and prices are higher. Cast Borings and Wrought Turnings are in good supply, owing to the activity of machine shops, but prices are quite well maintained in view of this fact. Some transactions have occurred in Relaying Rails, but the demand is still greater than the supply. Quotations for New York and vicinity are approximately as follows, in gross tons:

Old Iron Rails.....	\$20.50 to \$21.50
Relaying Steel Rails.....	23.50 to 24.50
Old Steel Rails, rerolling lengths.....	15.00 to 16.00
Old Steel Rails, short pieces.....	15.00 to 15.50
Heavy Melting Steel Scrap.....	14.75 to 15.25
Old Iron Car Axles.....	21.50 to 22.50
Old Steel Car Axles.....	19.00 to 20.00
No. 1 Railroad Wrought.....	20.00 to 20.50
Iron Track Scrap.....	17.00 to 18.00
No. 1 Yard Wrought.....	18.00 to 19.00
Wrought Pipe.....	14.50 to 15.00
Ordinary Light Iron.....	10.50 to 11.00
Cast Borings.....	8.50 to 9.50
Wrought Turnings.....	12.00 to 13.00
Old Car Wheels.....	16.50 to 17.50

No. 1 Machinery Cast.....	15.00 to 16.00
Stove Plate.....	12.00 to 13.00
Railroad Malleable Cast.....	14.75 to 15.75

A. E. Piorowski, a major (retired) of the German Army, has been appointed the representative in this country of the Stahlwerks-Verband Actiengesellschaft of Duesseldorf, Germany, the German Steel Syndicate. Major Piorowski has been for a number of years the military representative of Fried. Krupp of Essen, a connection which he continues. His headquarters are at 31 Nassau street, New York.

## Metal Market.

NEW YORK, October 11, 1905.

**Pig Tin.**—The week's chief news of interest came out Monday in a special cable from Rotterdam to the New York Metal Exchange stating that the Banca Tin production is increasing and that the auction sale for 1906 will probably be 10,000 slabs more for each sale, equal to about 2,000 tons increase in the year. It will be remembered that earlier in the year there were various reports regarding the curtailment of the Banca production and at times the market was largely influenced by these reports. It was not at all strange in view of these facts that the London market should decline £2 2s. on this announcement. This gave a weak tone to the New York market and tin was sold on Monday at a basis of 31.90c. to 31.95c. On Tuesday the London market was higher and tin sold in New York at 32c. To-day a further advance has been made in London, indicating that traders in that market were rather hasty in their judgment of the increased supply and that market closes firm to-day at £147 2s. 6d. for spot and £145 5s. for futures. In New York the quotation for spot Tin is 32.20c. Business was very dull during the last part of last week, but with the decline of Monday and Tuesday considerable metal was purchased for consumption. Business was especially good Tuesday, when about 200 tons were sold. The Tin arrivals so far this month consist of 1255 tons and there are afloat for American ports 2000 tons. This will probably be taken to indicate that the situation is becoming more favorable to consumers.

**Copper.**—The long continued high price has resulted in dull business, very few inquiries having been received during the week, and orders consisting chiefly of carload lots. The general price is 16.62½c. for both Lake and Electrolytic, while Casting is sold at 16.37½c. It is understood, however, that special brands, such as Calumet & Hecla, command a considerable premium over these prices. Copper of this brand has been freely sold at 17c. There seems to be no business in future sales, so much so that there are no quotations to represent deliveries for the first part of next year. In London the market is slightly higher, at £71 10s. for spot, £70 5s. for futures and £77 for Best Selected. The exports so far this month have been very light, amounting to but 4296 tons.

**Spelter.**—There has been an excellent inquiry for Spelter, the price remaining on the old basis of 6c. to 6.10c. for spot, October and November shipments. New York City delivery. In St. Louis the market is firm at 5.85c. The price of Zinc Ore remains practically on the old basis of \$49 to \$52 per ton. In London the market is steadily forging ahead, as has been the case for several weeks, and to-day's quotation for spot is £28.

**Pig Lead.**—While the American Smelting & Refining Company maintains the old quotation of 4.85c. for shipment Lead in 50-ton lots, spot stocks are freely taken on a basis of 4.95c. to 5c., New York. This relatively high price is attributed to the car shortage. In St. Louis the market had a sharp advance, and rules steady on a basis of 4.92½c. In London a like advance has been made, Soft Spanish Lead being quoted on a basis of £14 12s. 6d.

**Antimony.**—The market is lower, with little or no business. Hallett's is quoted at 12.25c. to 12.50c., Cookson's at 12.50c. to 12.75c., and other brands 11c. to 12c.

**Quicksilver.**—No change has taken place since the price of \$40 was announced for flasks of 75 lbs. in 100-flask lots. In San Francisco domestic orders remain on a basis of \$39, while the London market is unchanged at £7 2s. 6d.

**Tin Plate.**—As was noted in the report last week, the principal producers were selling at about 25c. concession from the official price. This price has now been changed, and sales are actually being made on a basis of \$3.49, f.o.b. New York, or \$3.30, f.o.b. Pittsburgh, for 100-lb. IC Coke Plates. In Swansea Welsh Plates are higher at 12 shillings 3 pence, due to the advance in Pig Iron.

The report that the Jones & Laughlin Steel Company, Pittsburgh, had bought 16,000 acres of coal land in Washington County, Pa., at the price of \$250 an acre is officially denied. The company last summer secured an option on a large acreage of coal lands in that county,

but after carefully considering the option it was decided by officers of the company not to exercise it.

## Iron and Industrial Stocks.

NEW YORK, October 11, 1905.

Some interesting developments have occurred during the week. An initial dividend of 1 per cent. has been declared on the common stock of the United States Cast Iron Pipe & Foundry Company. It is not stated whether this is quarterly or semiannual, future declarations being dependent on business conditions. The stock sold up to 41 on Monday, following the dividend declaration and then reacted to some extent. The dividend action evidently had the effect of stiffening other industrials, as Steel Foundries common, which had sold down to 10½ on Thursday, reached 11¼ on Tuesday, and the preferred, which had been selling at 40 last week, advanced to 43½ on Tuesday, and to 45½ on Wednesday. Locomotive common showed very great strength, advancing during the week from 53½ to 59½ on Tuesday. Car & Foundry common sold from 37 up to 39½. Colorado Fuel advanced from 45¼ to 48¾. Other industrials were strong, but their fluctuations were within comparatively narrow limits. The Steel Foundries 6 per cent. bonds, which sold at 80 and interest when they were first placed on the market some two weeks since, have advanced to 85½. Last Fuel advanced from 45¼ to 48¾. Other industrials were made at the following prices: Can common 11½, preferred 71¼; Car & Foundry common 38¾, preferred 100; Cast Iron Pipe common 38¾, preferred 96½; Locomotive common 59½, preferred 114; Steel Foundries common 11¾, preferred 44; Colorado Fuel 45¾; Pressed Steel common 46¾, preferred 96¾; Railway Spring common 44¾, preferred 102½; Republic common 25, preferred 95; Sloss-Sheffield common 71¼, preferred 107; Tennessee Coal 86; United States Steel common 38, preferred 104¼.

Following the publication of the annual report of the Crucible Steel Company of America, it can be stated that this company is fully expected to declare a dividend on its preferred stock of 1 per cent. quarterly in December next, payable in January. No dividend has been paid since December, 1903. The preferred stock is entitled to 7 per cent. per annum, cumulative, but when dividends are resumed they will be at the rate of 4 per cent. annually for a time at least.

It is stated that the La Belle Iron Works, Steubenville, Ohio, will soon place its stock on an 8 per cent. basis, an increase of 2 per cent. over the present rate.

**Dividends.**—The Harbison-Walker Refractories Company, Pittsburgh, has declared a quarterly dividend of 1½ per cent., thus restoring the stock to its former 6 per cent. basis, from which it was reduced to 4 per cent. in July, 1904. As this stock is cumulative there is now 2½ per cent. due on back dividends.

United States Cast Iron Pipe & Foundry Company has declared an initial dividend of 1 per cent. on the common stock and the regular quarterly dividend of 1¼ per cent. on the preferred stock, both payable December 1.

## New York Pig Iron Warrant Market.

There was a decided lull in the sale of Pig Iron warrant certificates in the Produce Exchange during the week ending at noon on Wednesday, the transactions amounting to but 200 tons, as follows: 100 tons, December, regular, \$15.95; 100 tons October, regular, \$15.75. Pig Iron warrants as well as certificates were offered for sale during the week and the following prices were established: Southern No. 2 November foundry, \$12.50 bid, \$12.75 asked; Gray Forge, \$11.25 asked; Pennsylvania, \$17.50 asked; Alabama, November, \$12.75 asked; No. 2 Birmingham, \$12.75 asked; Birmingham No. 2, \$12.75 asked. The following prices for Pig Iron warrant certificates were established on call Wednesday noon:

	Regular.		Foundry.	
	Bid.	Asked.	Bid.	Asked.
Cash .....	\$15.50	\$16.00		
October .....	15.50	15.95	15.75	16.25
November .....	15.50	16.05	15.75	16.25
December .....		16.15	15.75	16.25
January .....	15.85	16.30	16.00	....
February .....	15.85	16.50	16.10	....

B. Samuelson & Co., Limited, proprietors of the Newport Iron Works, Middlesbrough, England, recently opened a club house for the use of their 1200 workmen. The institution carries out the desire of the late Sir Bernhard Samuelson to provide for the recreation and comfort of the men and furnish a counter attraction to the public house. The club house has a large reading room, smoking room, dining hall and billiard and game rooms.



## The Machinery Trade.

NEW YORK, October 11, 1905.

The week under review has been productive of a good general business, the orders, though small, coming in in good volume and from a wide area. The purchases of a few tools each by many concerns places the trade on a stable basis and gives assurance of a continuance of the active business that has prevailed for some weeks. A feature of the market was the demand for the heavier class of tools, a considerable number of which were included in two good sized contracts which were closed a few days ago.

### Two Railroad Lists.

An impetus is given the inquiries issuing from the purchasing department of the Pennsylvania Railroad Company by a list of tools subjoined, which are required for the Union Railroad Division. In addition to the Union Railroad list there is also a number of items required for the locomotive testing plant at Altoona, Pa., and a seven span superstructure for a bridge at Union street, Hollidaysburg, Pa.

**Union Railroad Division.**—One 12½-ton, three-motor, 220-volt, direct current crane; iron work for shelter at Tyrone station; metal working lathe, 28-inch swing, motor driven; slotting machine, 20-inch stroke, motor driven; metal planing machine, 36 x 36 inch, motor driven, length of table, 8 feet; pipe cutter, to take 6-inch pipe, motor driven; plate rolls, to roll sheet 10 feet wide and ¾ inch thick, top roll to lift, motor driven; feed and flanging machine, motor driven; heating furnace for above, to use fuel oil; cutting off machine, with increasing speed mechanism, to accommodate from 1 to 4½ inch stock, motor driven; pneumatic tube welder; pneumatic tube roll; 100,000-gallon capacity steel water tank, with a steel base, 45 feet high from top of foundations to floor of tank.

**Locomotive Testing Plant at Altoona.**—One volute pump, capacity 900 gallons per minute against a head of 50 feet, to be provided with a directly connected motor, taking direct current at 220 volts; one two-stage turbine pump, to deliver 900 gallons per minute against a head pressure of 75 pounds per square inch, to be provided with an 8-inch suction and discharge pipe, and to be complete with motor arranged for 220 volts direct current; one cast iron water tank, 6500 gallons capacity, length 12 feet, width 12 feet and depth 6 feet.

Plans have been completed by the Mississippi Central Railroad Company for the shops it is to erect at Hattiesburg, Miss., and work of construction will probably be started very soon. There is to be a car shop 151 x 243 feet and a machine shop 151 x 220 feet. The equipment for the blacksmith and machine shops will include six lathes, three drilling machines, two milling machines, one bending roll, one flue welding machine, one punch and shear, one drill press, one flue furnace and ten fires in the blacksmith shop. The car shop equipment will include one pattern-makers' lathe, one wood working machine, one graining machine, two rip saw tables, two vertical car tenoning machines, two vertical hollow chisel mortising machines and two car boring machines. It is the intention to increase this equipment considerably as the shops take on more work. These improvements are to cost about \$60,000, more than half of which amount will probably be expended upon the mechanical equipment, which has not yet been purchased. M. H. McCabe is superintendent, with headquarters at Hattiesburg.

### Machinery Notes.

An additional contract has been placed by the New York, New Haven & Hartford Railroad Company for electric locomotives for suburban service. The company has placed a contract with the General Electric Company for five electric locomotives and intends to buy 30 more.

It is probable that the American Can Company, which has main offices at 11 Broadway, will continue in the market for machinery for some time, as in addition to the projects under way for factory enlargements and new plants the company will in all probability have to rebuild its plant which was recently destroyed by fire at Davenport, Iowa. It is understood that about \$75,000 worth of machinery was consumed in the fire, and the total estimated loss amounted to about \$175,000, most of which was insured. Nothing has been actually decided as yet regarding the rebuilding of the plant, but it is admitted that the company's present works are running to their full capacity and another plant will undoubtedly be required to cope with the present business conditions. Work on the plant the company is building on Eighth avenue, New York, is progressing rapidly, and it is believed that the machinery will be installed before many weeks. Bids are being received at the office of the company's engineering department, at 11 Broadway, for a 250 horsepower engine and a 15-kw. dynamo, both direct connected, besides two boilers, heaters, pumps and like appurtenances. The company has been arranging for purchases for some time, it is said, and the dealers predict that there are more orders to be placed.

The Wire & Telephone Company of America, Rome, N. Y., which took over the plants of the Empire Wire Company and the Electric Wire Works last August, has received bids on most of the machinery it will require for equipping its new building, 50 x 250 feet. A little later on, however, the company will probably purchase some lathes, presses and shapers.

The American Locomotive Automobile Company, Schenectady, N. Y., has been organized with \$300,000 capital by the American Locomotive Company to operate the company's automobile business. Work on the factory at Schenectady is progressing rapidly, and it is stated that all the machinery for the plant has been contracted for. The company arranged to spend about \$100,000 for machinery, which principally provided for the purchase of machine tools to be used in making the smaller parts of the automobiles. With arrangements for this department of its business completed, it is thought that the company will now come into the market for the equipment for its new shop at the Brooks Works, Dunkirk, N. Y., which is to be devoted to the manufacture of the Atlantic steam shovel. At that plant the company is building a new foundry 175 x 650 feet, into which the present foundry equipment will be moved. The old foundry building is to be equipped with new machinery as the steam shovel department.

The Universal Caster & Foundry Company, whose main offices are at 1170 Broadway, New York, has decided to erect two additions to its plant on Jackson street, Newark, N. J., to be used principally for foundry purposes. One of the buildings will be 50 x 100 feet and the other will be 25 x 50 feet. The details of equipping the structures with machinery are being attended to at the New York office of the company. The buildings will be of brick.

For some time the Meurer Brothers Company, manufacturer of tin plates, Brooklyn, N. Y., has had under way plans for the erection of quite a large building on a site of 14 lots fronting on the north side of Borden avenue and extending through to the south side of Third street, Long Island City. Work of construction is well under way and the company has under consideration the purchase of the necessary machinery. At the present time bids are being received on the boilers and electric plant.

The Chilian Contracting Company, which was recently formed by interests connected with the firm of J. G. White & Co., 49 Exchange place, will in all probability be a heavy purchaser in the machinery market in the near future. The company was formed to undertake the construction of extensive public works in Chili, and there is little doubt that the company will invade the South American field, and will be a competitor for the work on large construction schemes with European firms which have heretofore had a large slice of the patronage in that territory. No announcement has been made as yet as to the nature of the work to be undertaken in Chili, but it is understood that the company has an agreement with the Chilian Government to carry out a large Government contract, and as it has been the policy heretofore of the J. G. White interests to purchase machinery here whenever possible, the buying which will necessarily precede the construction operations will no doubt benefit the New York market.

The Holland American Construction Company has been organized by interests closely allied with the Westinghouse Electric & Mfg. Company for the purpose of undertaking some extensive contracting operations in Continental Europe. Among the schemes being considered by the company is a plan to build a railroad from the German frontier to the North Sea covering 115 miles. The officers of the company state that the plan has not been adopted wholly, and it is but one of the schemes which the company has for invading the contracting field in Europe. The Board of Directors of the company includes George C. Smith, vice-president of the Securities Investment Company of Pittsburgh; Walter D. Updegraff of the same company, Newcomb Carlton, fourth vice-president of the Westinghouse Electric & Mfg. Company, who has charge of the financial end of the Westinghouse electric interests in New York, and Joseph H. Lukach, a director of the British Westinghouse Electric & Mfg. Company, Limited. John F. Alden, formerly connected with the American Bridge Company, J. George Kaelber, Charles H. Palmer and John H. Beckley, who are prominently identified with the new company, have sailed for Europe to join Mr. Lukach, and they will, it is said, proceed to Holland to look into the plan. While no definite plans for the proposed railroad have been adopted as yet, it is said that the company has in mind the construction of tributaries to the main line which will bring the total expenditure up to about \$5,000,000. Officials of the company state that it will not confine its attention entirely to railroad matters, but will take other contracts as well.

### Power and Municipal Work.

Further bids are asked by Commissioner of Water Supply, Gas and Electricity, New York, for the mechanical equipment for two more pumping stations for the high pressure salt water fire service. The Commissioner will receive bids until October 25 for five electrically driven pumps with



all appliances complete for the station to be erected at Gansevoort and West streets, and for five electrically driven pumps for the station to be erected at the corner of Oliver and South streets. The time allowed for completing the work will be 220 working days.

E. C. White, engineer of the Loomis Sanatorium, Liberty, Sullivan County, N. Y., is desirous of ascertaining prices on electric heaters, and would like to hear from firms making a specialty of electrical heating systems.

A 28-story office building is to be erected on the dock front on West street from Cedar to Albany streets by the West Street Improvement Company, of which Gen. Howard Carroll is president, and in which John B. McDonald is interested. The building is to be 158 feet on West street, 119 feet on Cedar street and 102 feet on Albany street. The main structure will be 306 feet high, and there will be an ornamental tower 98 feet high surmounting the structure. It is estimated by Cass Gilbert, the architect, that the building will cost \$2,000,000, and a power plant of about 900 horse-power will be installed. Gunvald Aus, who has an office at 79 Wall street, is the engineer in charge of the mechanical equipment of the building, and Burt S. Harrison, who is located at the same address, will have charge of the structural steel work.

#### Business Changes.

The Alberger Condenser Company, 95 Liberty street, New York, and 205 La Salle street, Chicago, announces that it has acquired the entire Wainwright business, and will in the future manufacture and sell the Wainwright feed water heaters and expansion joints. These specialties have of late been manufactured by the Taunton Locomotive Mfg. Company, Taunton, Mass., which is now closing out its business. William R. Billings, formerly treasurer and general manager of the Taunton Company, has become connected with the Alberger Condenser Company, and will be in charge of the Wainwright business under its new ownership.

The Sullivan Machinery Company, Chicago, Ill., which has an office at 42 Broadway, New York, has opened an office in the Houston Building, Knoxville, Tenn., in charge of E. L. Thomas, who was for several years connected with the New York branch. The company has also opened an office at Joplin, Mo. The Sullivan Machinery Company, manufactures rock drills, stone channellers and quarrying machinery.

### New England Machinery Market.

WORCESTER, October 10, 1905.

New England will be strongly represented at the meeting of the National Machine Tool Builders' Association at New York next week. The promised discussion of the question of increasing prices on machine tools and the fact that action, favorable or otherwise, will probably be taken furnish an unusually great incentive to attend the meeting. Most of the members have well defined opinions on the subject, and while willing and anxious to hear what manufacturers from this and other sections of the country will have to say they wish to be present to register their own views and their own votes. There is no difference whatever in the opinion that prices should be advanced because of the very much higher cost of labor and materials, especially the former. No one doubts that prices should be higher. But there is an element which doubts the expediency of action until the machine tool business of the country shall have been brought together in such complete harmony and understanding that there may be no doubt whatever of a strict maintenance of the schedule agreed upon. This is the only hitch. At the present time there would seem to be little temptation to cut prices, because there is enough business for every one, even at higher prices than would result from the proposed 10 per cent. advance.

As a matter of fact, prices are already being advanced by some of the machine tool manufacturers. An example of this is an increase of 5 per cent. made by a large manufacturer of planers, who found it necessary to take this action in view of the higher cost of production, in his case the chief item being materials, castings having materially risen. Five per cent. may be considered by the meeting to be an ample raise in the heavier tools, where material is a greater item proportionately to labor as compared with lighter tools, such as the ordinary run of lathes, milling machines, the lighter drills and other tools in which labor is very much the larger item of cost. But 10 per cent. will undoubtedly be the figure of advance of most of the machine tools if an advance is made. Inquiry among the builders of drills, shapers, milling machines, grinding machinery, planers, boring mills, presses, hammers and the more special tools seems to indicate a strong sentiment for the advance. A vote of the New England members of the association, based on their expressed opinions, would show a large majority for the increase. But several of the most influential of the manufacturers are in doubt as to the wisdom of such action, their views being based, as stated, on expediency and not on the present cost of production, and the arguments of these members may have their influence in

shaping the action of the meeting. Apart from the consideration of the schedule of prices of the standard lines of machine tools, the question of a schedule of prices of geared heads and motor drives will come up in the lathe section, probably for definite action, and may extend into other lines, especially the subject of motor drives, concerning which there is no present understanding between manufacturers.

The New York Central is buying some machine tools, a part of which will go into the shops of the Boston & Albany division, but beyond that little railroad equipment is being purchased by the railroads. The automobile manufacturers are good customers, and there are a number of new companies which have advanced to the point of equipping plants. The textile machinery plants are buying to some extent. Foreign orders are frequent, this branch of business seeming to increase if anything.

There is prospect of a good deal of industrial building during the winter and especially in the spring, and there should be a good source of business in the equipment of these new buildings, many of which will be in the metal lines. The railroads will probably be important buyers before another spring. The New York, New Haven & Hartford, the Maine Central and the Boston & Maine are looked upon as very certain to be in the market a little later for machine tools and other shop equipment.

The Simplex Mfg. Company, Granby, Conn., is a new corporation organized to manufacture an automatic envelope sealing machine and other inventions of Charles J. Fancher of that town, who is at the head of the business. A new shop will be built, to be about 40 x 200 feet and one story. The company will be in the market for machine tools and other equipment for ordinary use in light manufacturing. Until the new building is completed the company will occupy a factory building owned by M. Fancher & Son, Granby. The company has been incorporated in Connecticut with an authorized capital stock of \$100,000, of which \$50,000 will be used for working capital. The company has an office at 140 Nassau street, New York.

Harvey Hubbell, Bridgeport, Conn., manufacturer of machine tools and electrical specialties, will replace the present wooden buildings with a modern brick structure. A large brick addition to the present shop is practically ready for occupancy. This adjoins the wooden building. The proposed building will be erected around and over the wooden building and extending beyond it to the boundaries of the lot of land, the present shop to be occupied during the building. When the improvements are completed the capacity of the shops will be trebled.

The Joseph Hoyle Bobbin Company, Woonsocket, R. I., will be in the market for an electric generator for 100 lights, to be used in a plant recently purchased in that city, which will afford three times the present capacity.

The United Printing Machinery Company has taken the shops formerly occupied by the B. F. Sturtevant Company, Jamaica Plain, Mass., and is removing the machinery and general equipment of the company's shops at Plainfield, N. J., and Chicago. The business will be concentrated at Jamaica Plain and the other shops will be abandoned. The main office of the company is 246 Summer street, Boston. The company manufactures printing machinery of all kinds and is one of the largest of its class in the country. It was stated at the Boston office that little new machine equipment would be required in fitting the Jamaica Plain shops, as the combined equipment of the old shops will probably be sufficient. The company's new manufacturing quarters were occupied by the B. F. Sturtevant Company until it moved into its new plant at Hyde Park.

Willie C. Young, Worcester, Mass., manufacturer of machine tools, has removed his shop from Hermon street to 53 Gardner street, where he will continue the manufacture of lathes and other tools. The change in location was made necessary by the purchase for another purpose of the building formerly occupied.

### Chicago Machinery Market.

CHICAGO, ILL., October 10, 1905.

Railroad buying of machine shop equipment in this market, which has been very heavy this year, continues unabated and Clinton and Canal street machinery dealers report large sales from store of moderate sized tools. A number of Eastern and Western manufacturers of drill presses have advanced prices slightly, the advance up to date averaging about 5 per cent. No advances, however, have yet been made on other tools. The movement of second hand machinery continues heavy, especially in those lines where dealers are unable to make immediate deliveries of new tools.

The American Bicycle Company has recently flooded this market with second-hand machinery, having sold the bulk of the second-hand equipment which it had stored at its Western plant. When the company was organized many factories were dismantled, manufacturing was centralized and all the abandoned equipment shipped to this plant. From time to time small lots were sold to dealers, but not until recently was the bulk disposed of. The machinery con-

sists almost entirely of small tools, such as were used in bicycle factories.

The gasoline engine industry in the West is being developed very rapidly. Numerous new types of small gasoline engines, designed almost entirely for farm use, have lately been placed on the market, and new plants are constantly springing up for the manufacture of this new farm power. The gasoline engine will largely replace the wind mill on account of the uncertainty of its power, big inroads having already been made in this trade. Nor will this engine be only used for pumping water, but for operating practically all farm machinery as well.

A list of machine tools is about to be promulgated by the Frisco system which will call for an expenditure of about \$125,000. Preliminary estimates of the cost of this equipment are now being prepared by the mechanical department of the road, with headquarters in St. Louis, and as soon as the nature of the equipment can be definitely decided upon the list will be sent to the machinery dealers and manufacturers.

The International Harvester Company is again figuring as a large buyer of machine shop equipment for its gasoline engine plant at Milwaukee and its McCormick plant in this city. Equipment costing nearly \$20,000 has been purchased during the week from local dealers for the Milwaukee plant, where the output of gasoline engines is to be increased fully 25 per cent. Considerable machinery is also being purchased for the McCormick works. During the past two or three years very little new machinery has been added to its plant equipment, as its manufacturing capacity was sufficiently large to meet all demands, this being especially the case since the Russian tariff went into effect on American harvesting machines, resulting in the loss of much of the Siberian trade.

The Brunswick-Balke-Collender Company, Chicago, one of the largest manufacturers of interior finishings, store and office fittings and billiard tables, is about to build two large plants, involving an expenditure of \$700,000. One of these will be at Muskegon, Mich., and the other at Long Island City, N. Y. The Muskegon plant will comprise two three-story manufacturing buildings, one of which will be 65 x 325 feet and the other 65 x 125 feet. A power house 50 x 100 feet will also be erected. The buildings will be of mill construction on concrete foundation, with brick and stone fronts and tile roofing. Equipment for the power house will consist of about 300 horse-power in boilers, 250 horse-power in engines, dynamos, motors and other electrical power units. The wood working and other machinery requirements for the manufacturing buildings will be very heavy, as both structures will be fully equipped throughout. The plant at Muskegon is being erected on a 12-acre site and will be used exclusively for the manufacture of billiard tables. This project, including the purchasing of equipment, is in the hands of the Chicago officers of the company.

The Western Foundry Company, Chicago, is preparing to add a new foundry, cleaning building and core shop. The buildings will be of brick and steel construction and have the following dimensions: Foundry, 115 x 250 feet; cleaning building, 60 x 272 feet; core shop, 60 x 75 feet. The melting capacity of the present plant will be increased by the addition of one cupola with a rated capacity of 15 tons an hour. The necessary machinery for the foundry and cleaning department, consisting of foundry equipment, grinding and cleaning machinery, has not yet been purchased. Bonds to the amount of \$40,000 will be issued to cover the improvements.

The O. L. Packard Machinery Company, Chicago, secured an order from the International Harvester Company for about \$10,000 worth of machinery for shipment to the company's Milwaukee gasoline engine plant. The shipment included six 24-inch, four 36-inch and one 20-inch American lathes; one 30 x 30-inch by 8-foot American planer and three 30-inch Prentice Brothers drills with gear box drive.

The Marshall & Huschart Machinery Company, Chicago, last week shipped a carload of machinery to the Osler Mfg. Company, Los Angeles, Cal. This shipment contained lathe, radial drill, punches and miscellaneous machinery. Another carload of machinery containing complete machine shop outfit was shipped to the Denkan Rubber Company in Louisiana.

F. E. Pfannmueller & Co., First National Bank Building, Chicago, report the following sales. Tod blowing engine, 38, 84 and 48 inch, to blast furnace plant located in Missouri; 250-foot air compressor to Cordele, Ga.; complete electric light plant equipment to Chicago Brick Company.

The National Brick Machinery Company, Chicago, was awarded contract by the United States Brick Corporation, Michigan City, Ind., for \$8160 worth of brick making machinery.

The Standard Steel Car Company, Pittsburgh, works at Butler, Pa., has recently opened a foreign office in Paris, France, and has appointed H. Glaenger as manager. It has recently received contracts for steel cars and other equipment from Holland, Spain and South America.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, October 10, 1905.

Machine tool builders are having all they can do to take care of new business coming in and make deliveries as required. Both foreign and domestic inquiry is on the increase, with trade from abroad showing a very decided gain over the preceeding month's business. Prices are being firmly maintained, all signs pointing to an increase in this direction rather than the reverse.

As was stated in these columns some weeks since, the next meeting of the National Machine Tool Builders' Association will be held in the city of New York on the 16th and 17th inst. At that time the matter of prices will come up for discussion and action will probably be taken to the end that this may be brought about. Secretary Montanus of the National Machine Tool Builders' Association has issued an important circular, an exact copy of which is not attainable, but the general substance of it is that an "invitation has been extended to all the prominent machine tool builders not yet members of the association to first consider the advantage of joining the association, and secondly to get an expression from the trade as to their opinion whether the general activity and volume of business now moving would justify an advance in prices all along the line, owing to what has not been disputed or contradicted, that the advance in raw material, embracing nearly every class, and the gradual advance in labor with an inclination on the part of same to shorten the hours of labor, all of which results in a lesser profit to the manufacturer and the advance in the cost of his product, if it would not justify an advance of say at least 5 or 10 per cent."

The Platt Iron Works Company, Dayton, Ohio, has recently purchased 25 acres of ground on which it expects to erect a boiler shop to be used in connection with the present plant. As it is at present the company is crowded for room and the boiler department occupies several portions of the plant. The object is to assemble this portion of the business under one roof and utilize that now occupied for other purposes. The present machine shop is 360 x 500 feet and the foundry 300 x 300 feet, equipped with six electric cranes. Thirty tons can be cast at one heat, which has been successfully accomplished on several occasions. It has built and is now testing a large pumping outfit for municipal work at Owensboro, Ky., capacity 3,000,000 gallons; one for Haverhill, Mass., of 7,000,000 gallons; large grease rendering outfit for Buenos Ayres; 500 horse-power boiler for the General Electric Company, Schenectady, N. Y. The company has orders from the United States Government for 45 torpedo air compressors, which will be ready for shipment in a short time. Considerable new machinery will be purchased for the expansion of the plant, a portion of which has already been secured. The list is as follows: One friction back gear brass lathe, one splitting shear attachment for No. 4 punch, one mud ring and flue sheet drill, one No. 5 bulldozer, one Baush machine tool, one No. 2 horizontal punch, one 28-inch upright drill, one planer 10 x 10 x 32 inches, one 12-inch slotter, one 30-inch drill, 3-inch arm; and 28-inch turret lathe, special Lodge & Shipley; one 22-inch x 10-foot B. G. engine lathe, one 22 x 12 and one 18-inch x 8-foot engine lathe, one 33-inch B. G. lathe, one horizontal boring mill, No. 3 Niles; one 10-foot Betts extension boring mill, one Jones & Lamson 2 x 24 inch automatic turret lathe, one double head planer tool 3 x 3 x 12 inch, one vertical drill press, 21-inch table; one extra heavy swing grinder, one dry kiln apparatus, one 30-inch steel plate planing mill exhauster, one No. 71 Lidgerwood hoisting engine, one 21-inch heavy pattern plain drill, one No. 3 sensitive drill, one 20-inch by 10-foot lathe, patent head; one 18-inch by 10-foot lathe, bronze boxes; one 20-inch by 10-foot lathe, bronze boxes; one 14 x 72 inch Norton grinding machine, one 2 1/2-foot plain radial drill, one No. 2 5-foot arm improved style radial drill, one 28 x 14, one 42 x 16, one 20 x 10 and one 20-inch by 8-foot engine lathe; one No. 5 turret lathe with special automatic chuck for making brass pump valve seats, one 16-inch lathe, 10-foot bed; two 5-ton 3-motor, one 10-ton 3-motor, one 20-ton 3-motor electric cranes; one No. 1 chucking machine, Oliver friction geared head turret lathe; one 16-inch high duty shaper, one 24-inch high duty shaper, one 3-inch plain milling machine and one 5-inch turret lathe.

The Safety Emery Wheel Company, Springfield, is rushed with business and running to full capacity. It makes a full line of grinders from the smallest bench machine up to one capable of carrying a 48-inch wheel and emery wheels from 1/4 to 48 inches, any thickness. The plant covers six acres of ground and has a full equipment. Nine kilns are constantly in use, which are inadequate to take care of the rapidly growing trade, and the company contemplates the erection of four additional kilns in the near future. It manufactures the heaviest dry grinders made, and there is scarcely a plow factory in the United States that is not equipped with these grinders. The company has an arrangement for testing all wheels before shipping that is in itself almost perfect. An order was received from Milan, Italy, for three wet tool grinders, and there are on the floor ready for shipment a very large automatic cylindrical knife grind-



er with taper attachment weighing 15,000 pounds for Chalmers & Williams Company, Chicago, Ill.

The Foos Mfg. Company, Springfield, Ohio, manufactures grinding mills for farm use and general purposes. A specialty is made in the line of grinders for grinding rubber, cork, asbestos, feathers, &c. It has recently placed upon the market a direct connected 4 horse-power gasoline engine and mill for use of farmers that is a radical departure from old lines and is proving to be a great success and filling a long felt want among this class of people. The company contemplates improving its present equipment by replacing lathes by other machines that it anticipates will be of material benefit. Trade is said to be growing very fast, with order books well covered.

The Owen Machine Tool Company, Springfield, Ohio, advises that it is having a fair share of business, and is well satisfied. It builds milling machines from No. 00 to No. 3. The company recently put on the market a new hand miller that has met with excellent success. Foreign trade with England and Germany is good and shows a large increase over the previous months.

The Springfield Machine Tool Company, Springfield, Ohio, builder of lathes from 14 to 42 inches, and shapers, both crank and geared, from 12 to 24 inches, reports an excellent condition of trade. It has recently added a new high speed No. 3 19-inch new type to its equipment. It also manufactures the Ideal lathe, which commands the highest price. The power is furnished by a 250 horse-power Buckeye engine direct connected to a General Electric generator. A subdivided line of shafting is run through the plant connecting the tools. Sturtevant system of heating and compressed air all over the shop. Export trade is good, eight orders from abroad being received one day last week.

The National Machinery Company, Tiffin, Ohio, says that its bolt cutter and nut taper business is of such large dimensions that it is considerably behind in orders, although it is making strenuous efforts to take care of its friends in the matter of delivery. The company has brought out several entirely new machines recently, and has made radical changes in the line of heading and forging machinery, calculated to give increased durability and render all parts extremely accessible and easy to adjust. The new style of headers seems to appeal to the trade, and is meeting with a most gratifying reception.

The Brownell Company of Dayton, Ohio, builder of steam engines and boilers, also feed water heaters, reports business moving along in regular channels, with prices somewhat advanced over what they were a year ago. Its plant covers 13 acres of ground, and consists of boiler shop, machine shop and foundry. Compressed air is used in the operation of all cranes and all equipment is of latest design. The 300 employees are working full time, and everything is reported to be in a very satisfactory condition.

## Philadelphia Machinery Market.

PHILADELPHIA, October 10, 1905.

Somewhat of a lull occurred in the buying of machine tools in this market the past week. This, however, is not looked upon with any apprehension by manufacturers or merchants, as it frequently happens that the first week in the month is rather bare of business, and the present quietness is looked upon as merely a temporary let up in the buying. That business will be resumed in full force at an early date is evidenced by the inquiries that are being received for all classes of tools. These have increased materially during the past week, and should only a fair percentage of them develop into actual orders, builders in this territory will have more work than they can conveniently handle. Manufacturers of both tools and machinery are generally busy, some having orders enough on hand to keep them engaged for many months ahead. This is particularly the case with the larger plants, while some of the smaller plants also have a large amount of work on hand, and in some lines find it hard to supply tools to their customers as promptly as desired. Machinery merchants are handicapped in some instances by the inability of manufacturers to make even fair deliveries, and when the date of delivery is advanced nearly six months, as has been done in some cases, they find it difficult to close business.

What sales have been made recently seem to cover a general line of tools, fairly well divided between the heavier and lighter grades. Special tools have not been in as great demand during the past few weeks, although builders of that class of machinery are quite busy with work already in hand.

Automobile repair shops are becoming quite active buyers of the smaller range of tools, and in some cases have placed orders recently for fairly heavy ones. This business will no doubt increase and become an important market for some lines, and, as the automobile increases in size and capacity, which it appears to be rapidly doing, the

necessity for heavier and better tools to make needed repairs, will also increase.

A more active trade has developed in boilers and engines, both of high and low capacity, and both boiler makers and engine builders are well pleased with the condition of business. Second hand engines and boilers, as well as machinery and tools have also been in better demand, and a very satisfactory fall trade is looked forward to.

Foundries are more active. The steel casting plants have been working up to their capacity for some time, and the demand for grey iron castings has increased to such an extent that a number of foundries now have more work offered than they can turn out promptly. Some of the latter plants are also handicapped to some extent by their inability to get enough molders to enable them to work their foundries at their full capacity. Raw materials are, however, in good supply, but at advancing prices.

Work has been started by W. W. Lindsay & Co. of this city on a large addition to the armor plate plant of the Midvale Steel Company. The new building will be used as an addition to the tempering department, and will be constructed of structural steel covered with corrugated iron. The addition measures 108 x 130 feet.

The contract for the erection at Elkins, W. Va., of a machine shop, foundry, pattern storage and pattern shop and a boiler house for the Humphrey Mfg. Company, Towanda, Pa., mention of which has been made in these columns was let to L. E. Parkinson, Elkins, W. Va. Operations are expected to be started at an early date.

The Baldwin Locomotive Works is having preliminary estimates made for its new shop at Seventeenth and Buttonwood streets. This building will probably measure about 108 x 200 feet, and will be used as an electric truck shop and for other purposes not yet fully decided upon. The Baldwin Works reports business in very satisfactory condition, orders for locomotives coming in freely, mostly however for small lots from railroads and individual concerns. All the various departments of the plant are extremely busy and the work now in hand is sufficient to keep it actively engaged for many months.

The Parker Boiler Company of this city will install 16 800 horse-power Parker water tube boilers in the new power house of the Philadelphia Rapid Transit Company, Delaware avenue and Laurel street. At the Second and Wyoming avenue power station of the same company, where 14 Parker boilers are already installed, two more of 800 horse-power each are to be added, while eight boilers, with a total of 5000 horse-power, will be installed for the John B. Stetson Company, also of this city. In addition to the above, the Parker Boiler Company is installing plants of various capacities in California, Michigan and a number of other States, and notes a steadily increasing demand.

I. H. Johnson, Jr., & Co., Incorporated, is busy in all departments. There has been a good demand for lathes and a number of orders for those of both the heavy and light types have been taken. Heavy deliveries of medium sized tools have been made, and several carloads are nearly ready for shipment to the Southwest. Some large tools have been sold to the various steel plants and a number of heavy lathes will be ready for delivery during the coming month.

The Espen-Lucas Machine Works has recently shipped several I-beam cutting off machines to parties in Mexico and in Canada. Steel foundry and bar cutting off machines have been furnished parties in New England and the Middle States, as well as to local concerns. Business has improved materially the demand for saws has been large and orders for special light machine tools and horizontal floor boring machines have been taken in addition to those for cold saw cutting off machines.

Wickes Brothers, through their local office in the Bourse, report a marked increase in business. There has been a good demand for all classes of machinery and inquiries are being received in good numbers. The company has shipped a 16 x 16½ x 24 air compressor and receiver to the Dravo Construction Company, Pittsburgh, Pa. A 70 horse-power Provident-Green engine has been sold to R. Harbison of this city, 24-inch by 26-foot lathe to the E. I. DuPont Company, Wilmington, Del., and a No. 7 direct connected fan to the Cambridge Coal Company.

Manufacturers who plan the application of motor drive to machines and machine tools often make unsatisfactory progress with the work because of their failure to supply the information necessary to enable the electrical manufacturer to bid on suitable machines. The electrical manufacturer usually follows an application for quotations with a request for complete and detailed information regarding the motor equipment needed. The Northern Electrical Mfg. Company, Madison, Wis., is able to furnish quotations on Northern machines for application to machines upon learning of the class of work to be accomplished and the voltage of the power circuit from which the current is to be taken. The company's extensive experience in all kinds of manufacturing plants applying motor drive for increased output usually enables it to determine upon the proper sort of motor equipment to be applied upon learning of the conditions.



## Government Purchases.

WASHINGTON, D. C., October 10, 1905.

The Isthmian Canal Commission will receive bids until October 16 for a quantity of supplies, including hydraulic rail punches, rail benders, &c.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until October 24 for a pipe bending machine and other supplies for the Eastern navy yards.

Proposals will be received at the Bureau of Supplies and Accounts, Navy Department, Washington, until October 20 for 31 motor generators of from 2 to 15 kw., 80 to 220 volts, for the New York Navy Yard.

The following bids were opened October 3 for machinery for the navy yards:

Bidder 1, Alexander & Garsed, Charlotte, N. C.; 15, Bailey-Smith Machine Company, San Francisco, Cal.; 25, Chicago Pneumatic Tool Company, New York; 27, Compressed Air Machinery Company, San Francisco, Cal.; 31, Columbus Pneumatic Tool Company, Columbus, O.; 33, Drew Machinery Agency, Manchester, N. H.; 65, Harron, Rickard & McCone, San Francisco, Cal.; 74, Handlan Buck Mfg. Company, St. Louis, Mo.; 78, Henshaw, Bulkley & Co., San Francisco, Cal.; 95, Montgomery & Co., New York; 97, Manning, Maxwell & Moore, New York; 98, J. C. Martin & Co., San Francisco, Cal.; 111, National Water Tube Boiler Company, New Brunswick, N. J.; 115, Niles-Bement-Pond Company, New York; 127, Pacific Tool & Supply Company, San Francisco, Cal.; 136, Rand Drill Company, New York; 143, Royce & Ricketts, Washington, D. C.; 144, Rockwell Engineering Company, New York; 155, Scully Steel & Iron Company, Chicago, Ill.; 161, Tatum & Bowen, San Francisco, Cal.

### Schedule No. 81.

Class 1. One bending roll machine—Bidder 33, \$938; 74, \$900; 78, \$845; 115, \$1350; 143, \$1200; 155, \$800; 161, \$754.50.

Class 2. Two swinging lathes—Bidder 65, \$1410; 78, \$1650; 97, \$1390; 115, \$1434; 127, \$1480; 161, \$1642 and \$1610.

Class 3. One turret lathe—Bidder 78, \$1865.

Class 4. Four piston air drills—Bidder 15, \$480; 25, \$480; 27, \$600; 31, \$566; 78, \$468; 161, \$480.

Class 5. One floor girder—Bidder 15, \$120; 65, \$80 and \$96; 127, \$97; 161, \$96.60.

Class 6. One portable iron crane—Bidder 74, \$90; 65, \$85.60.

Class 7. One Schwartz melting furnace—Bidder 95, \$2124; 98, \$1625; 144, \$1450.

Class 8. Three back geared engine lathes—Bidder 15, \$1587; 27, \$1443; 65, \$1635; 78, \$1650; 97, \$1593; 115, \$1695; 127, \$1605; 143, \$1500; 161, \$1545.

### Schedule No. 131.

Class 172. One water tube steam boiler—Bidder 1, \$2138; 111, \$2282.

### Schedule No. 135.

Class 221. Six pneumatic hammers—Bidder 25, \$450; 33, \$417; 97, \$285; 136, \$276; 143, \$342.

Bids were opened September 30 at the office of the Isthmian Canal Commission, under Serial No. 273, for class 1, 20 well drills, as follows:

Motley, Green & Co., New York, class 1, \$18,379.96; time, 60 days.

Manning, Maxwell & Moore, New York, class 1, \$17,664 or \$17,434; time, 60 days.

Hudson Engineering & Contracting Company, New York, class 1, \$19,344.44; time, 80 days.

St. Louis Well Machine & Tool Company, St. Louis, Mo., class 1, \$19,191.75.

Star Drilling Machine Company, Akron, O., class 1, \$19,272 or \$16,872; time, 60 days.

Wm. C. Barker Company, New York, class 1, \$12,702.88; time, 26 weeks.

Keystone Driller Co., Beaver Falls, Pa., class 1, \$18,717; time, 60 days.

Austin Mfg. Company, Chicago, Ill., class 1, wood frame, \$14,456; steel frame, \$15,956; time, 30 days.

The following bids were opened at the office of the Isthmian Canal Commission October 4, under Serial No. 274:

Class 2, 19 steam shovels, 70 tons capacity; class 3, 6 unloaders, 60 tons capacity; class 4, 12 unloading plows.

The Marion Steam Shovel Company, Marion, Ohio, class 2, \$10,450 each or \$198,550 for the entire number. Shipments to be two in April, two in May, two in June, four in July, four in August and five in September, 1906; class 4, \$900 each or \$10,800 for the entire class, c.i.f. Colon.

Atlantic Equipment Company, New York, class 2, six or more steam shovels, capacity according to specifications, \$11,750 each. Delivery during the months of May and June, 1906, or at the rate of two per month beginning in May, 1906, c. i. f. on dock Colon. If the Panama Steamship Company's present rates from New York to Colon can be secured

to apply on this shipment at the time agreed to make delivery will reduce unit price \$200.

Allis-Chalmers Company, Milwaukee, Wis., class 2, \$9400 each as per specifications, f.o.b. Colon. This price does not include freight to any other point nor does it include expense of erection or expense of operation for tests.

The Bucyrus Company, South Milwaukee, Wis., class 2, \$10,240 each or \$194,500 for the entire class, c.i.f. Colon. This price is made with the understanding that the Isthmian Canal Commission will furnish all unskilled labor for the erection of these shovels. If the commission will furnish all labor \$150 reduction will be made on each shipment.

Lidgerwood Mfg. Company, New York, class 3, \$7949 each or \$47,694 for the lot, c.i.f. dock Colon, boxed for export.

The following bids were opened September 30 for installing a heating, lighting and power plant in the Capitol, Washington:

Lynch & Woodward, Boston, Mass., \$862,726. For steam or electrical transmission, \$42 per foot of tunnel. If induced draft apparatus is installed for Sturtevant apparatus engine driven add \$11,545; motor driven add \$13,890. If two electrically driven pumps are substituted add \$2000. Tunnels to be built of concrete, and if installed complete add \$102,000. If a horizontal vertical engine is used deduct \$5000.

The Schofield Company, Philadelphia, proposition No. 1, \$1,015,450; for turbines with condenser bases add \$23,200; for return piping and connection with heating system add \$35,200. Proposition No. 2, \$974,100; for turbines with condenser bases add \$23,200; for copper expansion joints in place of slip joints in heating mains add \$8680; for return hot water piping in connection with heating system add \$35,273. For each foot movement of power house add or deduct for electrical condensers with proper installation \$5.17 per foot; for electrical condensers with cambric installation \$7.37; for heating and electrical ducts with steam pipe but without return pipe \$24; do, with return pipe, \$31.

McIntosh & Seymour Company, New York, for the work complete as specified, \$903,703. Add or deduct for steam transmission \$11.40 per foot; for electrical transmission \$4.50.

Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., proposition A, \$1,119,584; add or deduct for steam transmission \$47 per foot; for electrical transmission \$15.50. Proposition B, \$1,084,369; add or deduct for steam transmission \$47; for electrical transmission \$9.50. Proposition C, \$901,736; add or deduct for steam transmission \$24; electrical \$6.

Carl Leonard de Mural, New York, \$1,164,700 complete with Rice & Sargent engines or for the sum of \$1,119,800 with Curtis turbines. Add or deduct for steam transmission \$20 per foot; for electrical transmission \$14.

J. G. White & Co., New York, proposal No. 1, \$1,189,250; add or deduct for steam transmission \$15.95; for electrical transmission \$4.25. Proposal No. 2, \$1,059,299; same additions and deductions. Proposal No. 3, \$1,199,868; same additions and deductions. Proposal No. 4, \$1,033,646; same additions and deductions. Proposal No. 5, \$995,675; same additions and deductions.

Hanley-Casey Company, Chicago, Ill., \$1,047,297.85; add or deduct for steam transmission \$18; for electrical transmission \$9. Alternate proposition No. 1, \$971,197.85; additions or deductions for steam transmission \$18; electrical \$9. Alternate proposition No. 2, \$1,031,198.85; same additions and deductions. Alternate proposition No. 3, \$1,083,697.85; same additions and deductions. Alternate proposition No. 4, \$947,885.85; same additions and deductions.

Under bids opened September 19 for supplies for the various navy yards, the following awards have been made:

General Electric Company, Schenectady, N. Y., class 1, six induction motors, \$1170.

Manning, Maxwell & Moore, New York, class 82, two 10-inch wood turning tables, \$110.

Smith-Courtney Company, Richmond, Va., class 84, one Buffalo armor plate and shears, \$64.30; class 91, one bench grinder, \$37.50; class 93, one reciprocating mortiser, \$184.98.

Drew Machinery Agency, Manchester, N. H., class 92, one improved tenoning machine, \$234.

Crocker-Wheeler Company, Ampere, N. J., class 191, six electric motors, \$360.

White Hardware Company, Norfolk, Va., class 208, 12 hydraulic jacks, \$262.80.

The following awards have been made for machine tools for the various navy yards, bids for which were opened September 12:

Prentiss Tool & Supply Company, New York, class 14, one 5-foot universal radial drill, \$1223; class 22, one back geared screw cutting engine lathe, \$550.

Manning, Maxwell & Moore, New York, class 11, one 30-inch planing machine, \$1015; class 29, one 2-inch single bolt cutter, \$360; class 32, one 24-inch water tool grinder, \$79.

Garvin Machine Company, New York, class 15, one 30-inch back geared power feed vertical drill press, \$248.

R. K. Le Blonde Machine Tool Company, Cincinnati, Ohio, class 18, one 18-inch universal milling machine, \$474.47.

J. W. Cregar Agency, Philadelphia, Pa., class 23, two 16-inch back geared engine lathes, \$810.

Morton Mfg. Company, Muskegon Heights, Mich., class 27, one 48-inch portable key seating and slotting machine, \$2200.

New Haven Mfg. Company, New Haven, Conn., class 28, one 10-inch slotter, \$841.

William L. Sargent, Fitchburg, Mass., class 33, one 2-inch twist drill grinder, \$58.

General Electric Company, Schenectady, N. Y., class 35, two 20 horse-power electric motors, \$1024.

### The Dominion Iron & Steel Company.

Owing to the large supplies of raw material on hand on December 31, and the difficulties attendant upon the taking of stock in winter, the fiscal year of the Dominion Iron & Steel Company, Sydney, Nova Scotia, has been changed to end May 31. The company's profit and loss account as of May 31 last, with comparisons, is as follows:

Dr.	May 31, 1905.	Dec. 31, 1904.
Previous surplus.....	\$1,093,241	\$584,237
Interest on bonds.....	194,862	403,880
Interest on loans.....	81,048	183,087
Sinking fund.....	23,417	56,200
Total .....	\$1,392,568	\$1,227,404
Cr.		
Profit on sales.....	\$366,063	\$124,755
Rents, &c.....	4,796	9,408
Balance carried forward.....	1,021,709	1,093,241
Total .....	\$1,392,568	\$1,227,404

The balance sheet, with comparisons, shows the following:

Assets.	May 31, 1905.	Dec. 31, 1904.
Property .....	\$34,705,463	\$34,322,561
Cash, accounts receivable, &c.....	587,525	498,647
Material on hand.....	1,165,535	1,265,236
Prepaid insurance, taxes, &c.....	27,471	10,388
Special depreciation.....	528,818	300,000
Profit and loss.....	1,021,708	1,093,240
Total .....	\$38,036,524	\$37,490,077
Liabilities.		
Common stock.....	\$20,000,000	\$20,000,000
Preferred stock.....	5,000,000	5,000,000
Bonds .....	9,573,333	8,658,500
Bills and accounts payable.....	3,088,713	3,465,302
Interest, &c., accrued.....	180,690	206,979
Reserve for replacements.....	193,787	159,294
Total .....	\$38,036,524	\$37,490,077

Various improvements, now under way, are the enlargement of the electric power plant, additions to the open hearth plant and the installation of new machinery for underground mining. A third blast furnace will be brought into operation at an early date. The new rail mill, which has a capacity of 500 tons in each shift, has proved satisfactory in every way.

The profit and loss account of the company for the year ended December 31, 1904, showed a surplus, after interest and dividends, of \$1,028,661, but a decrease in net profits. This falling off was accounted for by the increased cost of production during the first half of the year, occasioned partly by the exceptionally severe weather, but to a greater extent by the loss of a large amount of remunerative business with the United States caused mainly by the reimposition of the coal duties.

**Elasticity in Cast Iron Car Wheels.**—Cast iron car wheels can be made stronger and more durable if made more elastic, according to the *Railway Master Mechanic*. It holds that the popular form of the double plate wheel must be abandoned, for that type is most rigid of all and contains metal where it is least needed. By reducing the rigidity of that portion between the rim and the hub the wheel will be more flexible, both laterally and vertically, thus making it better able to withstand shocks. With the more flexible construction the flange, which is now the weakest part, will in effect be strengthened, as the shock will not be localized on the root of the flange, but will be transferred more largely to the body of the wheel. The flange is the only part of the modern car wheel that has not been enlarged, simply because it cannot be thickened on account of the limits imposed by

frogs and crossings. But the need of a thicker flange, it is believed, will disappear with the advent of the wheel that has better material and with the material so placed as to combine strength with minimum rigidity. A number of 700-pound wheels, which closely conform to the ideas expressed above, are now running under 100,000-pound cars successfully. It is added that the wheels are made of charcoal iron, which, it is stated, seems to be the metal that will necessarily be used in improving the cast iron wheel.

### Customs Contentions.

#### Oxide of Iron.

Notwithstanding a defeat in the United States Circuit Court several months ago, the Treasury Department has decided to begin anew litigation concerning the customs classification of oxide of iron. With this end in view Secretary Shaw directed Collector Stranahan of New York to choose an importation favorable for another suit before the Board of United States General Appraisers and the Federal courts. The Collector finally selected an importation made by Francklyn & Ferguson, New York.

It appears that the chief use of the oxide is in the manufacture of paint, practically none of the product being used for smelting purposes. A great deal of testimony has been laid before the lower customs tribunal during the past few weeks by the Government and the importers. A representative of the Treasury Department states that a most complete record has been made and the Government officers are confident the board will in the new case uphold Secretary Shaw's contention that the oxide should be assessed at the rate of 30 per cent. ad valorem under the provision in the Dingley tariff law for "crude paints not specially provided for." On the other hand, Francklyn & Ferguson, through their attorneys, maintain that the proper rate of duty applicable to the oxide is 40 cents per ton, under the paragraph in the law providing for "iron ore."

Both sides concede that the article is an ore, but the Government insists that as its principal use is in the making of paints it should pay duty under the pigment schedules. The importers argue that regardless of the use to which the article is put it is an iron ore and as such is specifically provided for in the present tariff act. This view is the one taken by Judge Townsend in his opinion written for the Circuit Court for the Southern District of New York when the same question was presented last year. At that time the Court made this statement: "Congress having seen fit to levy a duty of 40 cents per ton on iron ore, without qualification as to its use, and without the limitation 'not specially provided for,' such designation must stand." Final briefs have been filed in the new case and the board will shortly formulate a decision.

#### Lead in Ores.

Marion De Vries of the Board of United States General Appraisers has returned to New York after spending ten days in the West, where he took testimony in many importers' disputes regarding the value and rate of duty applicable to various importations. While in Kansas City he heard testimony in the customs protest case of the Prime-Western Spelter Company, Gas City, Kan. The company objects to the method followed by the United States in making the assay test to ascertain the amount of lead in ores. It appears that the Treasury Department in making the assay test takes a dry sample. The percentage of lead in the dry sample is taken as the percentage of lead in the total cargo, which is not dry, but contains considerable moisture. There is a duty of 1½ cents per pound on the lead taken from the ore, and it is claimed by the importers that the Government's method results in the paying of much heavier duties than would be the case were the Treasury Department to reverse its practice. After the testimony taken at Kansas City has been written up Mr. De Vries will prepare a decision covering the points in dispute.



### Efficiency of Large Gas Engines.

In a paper read before the recent Philadelphia convention of the American Street Railway Association Arthur West discussed the question of overload capacity of gas engines and their efficiency as compared with that of steam engines. The following extract is made, in which experience with the Westinghouse gas engines is cited:

#### Meaning of Overload Capacity in a Gas Engine.

A gas engine and producer are thermally very much more efficient than a steam engine and boiler. With a well designed producer and gas engine plant a horsepower can be delivered with one-half the cost of fuel that is possible with a well designed steam engine plant. The power of the gas engine, however, is limited by the total volume of explosive mixture which can be drawn into the cylinders during the suction stroke, compressed and finally ignited. This condition sets a limit which does not allow of a large temporary increase of the power, such as obtained with the Westinghouse steam turbine by the automatic operation of the secondary admission valve. Such overload capacity is of course convenient for the purchaser, but it is unobtainable on a gas engine unless the engine is largely underrated, and the purchaser should consider that this is one of the prices that he pays for the enormously increased output obtained with the gas engine per pound of coal. The overload capacity is, therefore, simply the amount which the builder rates his machine below its ultimate capacity. It has been our practice to rate our gas engines in such a way that they would have a safe overload capacity of 10 per cent. Our machines are ordinarily good for somewhat more than this, but conservative engineering requires that there be a margin of power in order that overloads may not materially reduce the speed.

For ordinary cases the overload capacity of the generator and that of the gas engine should be about equal, although the gas engine will indefinitely carry its overload, while the generator will not in all cases unless it is bought with that understanding.

#### Four-Stroke and Two-Stroke Cycles.

The mechanical efficiency of a large gas engine is very much greater with a four-stroke cycle than with a two-stroke cycle, this being one of the arguments against the two-cycle engine. It is no uncommon thing to see two-cycle engines which do not realize as brake horsepower more than 60 per cent. of the work actually done by the combustion in the cylinders. The efficiency of a four-cycle engine varies considerably, but it may be said in a general way that a well designed engine will deliver about 85 per cent. of the gas indicated brake horsepower in the form of brake power. This 15 per cent. of power lost is not exclusively composed of frictional resistance of journals, cross heads, slides, &c., as is the case in a steam engine. The four-cycle engine has, of course, to draw in its own mixture of air and gas and compress the same, and its functions, therefore, combine those of a pump, a compressor and a motor.

It is the pumping and compressing work which causes the mechanical efficiency of the gas engine to be somewhat lower than that of a steam engine. The actual friction of the working parts need be no greater than with a well constructed Corliss engine—namely, 90-95 per cent. In order to keep down the friction and increase the reliability of the machines it is the practice of the Westinghouse Company to design large gas engines with provision for attaching a continuous return oiling system. The large amount of oil put through the journals increases the safety, requires less attendance and keying up and washes out dust if the engine is required to operate in an atmosphere which is not clean.

#### Efficiency Varies with Kinds of Gas.

The thermodynamic efficiency of the gas engine varies so much with different kinds of gas that it is hard to say just what the average value would be. It is probably not far from the truth, however, that its thermal efficiency is about 25 per cent., though in favorable cases

gas engines have obtained efficiencies well over 30 per cent.

There is an impression rather prevalent that a gas engine is uncertain and hard to start. A properly designed engine, supplied with fairly decent gas, can be started as easily as a steam engine. Large Westinghouse horizontal gas engines are started by means of compressed air, the only operations required being (1) open the main gas valve; (2) close the igniter circuit; (3) open one compressed air valve, similar in construction to an engine throttle. The compressed air puts the engine in motion, which draws the charge into the cylinders and compresses the same, after which the first explosion takes place. Air is shut off and the engine is in full operation. We find no more difficulty in starting our gas engines than a steam engine of comparative size.

With certain kinds of gas, inspection of the interior parts of the cylinders is often desirable at regular intervals of, say, a couple of months. This is especially the case with blast furnace gas and also with producer gas made from certain kinds of fuel.

### New Publication.

**Practical Planer Kinks.**—By Carroll Ashley. Size, 5 x 7½ inches; pages, 80. Cloth. Published by the Hill Publishing Company, New York. Price, \$1.

This is a book written for planer hands by one who has himself served seven years of apprenticeship on the planer. His aim is to give matter of practical value to the workman, enabling him to increase his usefulness by a better understanding and a wider knowledge of the little tricks of the trade. It begins with a description of a standard planer, accompanied by a view of one with the principal parts named. Another section deals with the tools required, how to keep them in condition and what their form should be. A large number of diagrams are given to illustrate the ways of doing odd pieces of work.

An indication of the scale of operations of the United States Steel Corporation is furnished by a recent order placed by the Oliver Iron Mining Company. It includes 57 switching locomotives and 40 steam shovels for stripping operations at the iron mines. For the ore roads of the corporation there have just been placed orders for 16 locomotives and 1600 steel cars. It is probable that the corporation will during this season bring down 19,500,000 tons of iron ore.

We can state officially that the report that W. U. Follansbee of Follansbee Bros. Company, sheet and tin plate manufacturer, Pittsburgh, Pa., had called a meeting for this week of the independent sheet and tin plate manufacturers for the purpose of forming an association to control prices and to establish a central selling agency is absolutely untrue. No such meeting has been called and at present there is no association of the independents.

Arrangements have been completed to organize a British company, to be known as the Wellman-Seaver-Morgan Company, Limited, with head office in London, England, which will manufacture in Great Britain under the licenses and patents of the Wellman-Seaver-Morgan Company of Cleveland, Ohio. This step has been taken to facilitate competition with British manufacturers, and the company will now be in a position to take large contracts, particularly for complete plants, to be manufactured in England if desirable. The new company will represent the Wellman-Seaver-Morgan Company in all the English Colonies and handle all its European business. S. T. Wellman is to be chairman, and B. W. Head of the London firm of Jeremiah Head & Son managing director.

A Glasgow press cablegram dated October 10 states that the Scotch steel makers on that day agreed to raise the list quotations of manufactured steel \$2.50 per ton. This makes an increase of \$5 per ton within the past two weeks.



### Philippine Iron Ore and Other Minerals.

WASHINGTON, D. C., October 9, 1905.—A report on the mineral industry of the Philippine Islands has been prepared by H. D. McKaskey, chief of the Mining Bureau of the Philippines, in which are concisely presented the latest data with regard to the prospecting and development of the deposits in the archipelago of iron ore, coal, copper, platinum, petroleum, gold and silver, &c.

Much activity in prospecting and development work was shown in several districts in 1904. Modern machinery has begun to arrive from the United States, and more of it is understood to be ordered and expected at an early date. Mining development is now being carried on in the provinces of Lepanto-Bontoc, Benguet, Pangasinan, Nueva Ecija, Bulacan, Rizal, Batangas, Tayabas, Camarines, Albay, Masbate, Cebu and Mindanao, and prospecting is being done in almost every island and province of the archipelago.

#### Iron Ore.

In Bulacan, Island of Luzon, in the mountains east of the towns of San Miguel de Mayumo and Angat, important deposits of rich hematite and magnetite iron ores have been known and worked by natives in a small way for over a century. Analyses of these ores have shown many of them to be very pure and some of them fully up to Bessemer grade. Correspondence is now in progress with iron works of Japan looking to the profitable shipment of these ores.

The natives of Bulacan have worked these iron ores in the open entirely and have smelted them in their small clay furnaces with charcoal as fuel. No flux has ever been used, although vast quantities of limestone are at hand. Excellent gray iron castings have been made for plow points and shares, and certainly the usefulness and economy of these deposits are capable of far greater application and profit than they receive at the present time. In Rizal Province, also in the vicinity of Bosoboso, there are coal and iron deposits which deserve more attention than they have yet had.

#### Coal.

In Albay Province, in Batan Island, Lieut. H. L. Wigmore, Corps of Engineers, United States Army, assisted by a detail of men, has been prosecuting a thorough examination of the coal deposits for the military government by means of the diamond drill. W. D. Smith, geologist, Mining Bureau, has been detailed to work out the economic geology of this area as his first work on the Philippine coal measures, and has been in the field for the last three months. This coal is of excellent reputation and suitable for steamer use.

In Cebu but little more than prospecting has been done during the American régime. There are important deposits of steaming coal in this island and two known deposits of lead ores. An analysis of coal from the promising coal measures of Carmen, containing four seams, reported to be 14, 13, 9 and 17 feet thick, respectively, will give an idea of the purity of the best Cebu coals:

	Percentage.
Moisture .....	5.00
Volatile combustible matter.....	43.92
Fixed carbon.....	48.51
Sulphur .....	0.37
Ash .....	2.2
Total.....	100.00

These coals are better than many American lignites mined, sold at a profit and used with success upon railroad and steamship lines in the United States, and they have been proved by practical tests in steamships in Philippine waters to do very well. Furthermore, they should be put on the Manila market for about \$3.25 per ton and on the market at Cebu for \$2.50 per ton, as against Japanese coal at approximately \$5 and Australian coal at \$6 per ton.

#### Copper.

In Lepanto, in the copper district of Mancayan, about 40 claims, including the Santa Barbara and the Sin Nombre pertenencias of the Spanish régime, all now located under the present mining law, have been secured as an option by agents of a New York syndicate, and an

expert is understood to be expected from New York to examine these properties in October of the current year. The old Spanish workings have uncovered large bodies of high grade copper ore on the Santa Barbara and the Sin Nombre claims, and it is anticipated that much systematic exploration work will be done upon the adjoining properties upon the arrival of the syndicate engineer.

In Batangas Province work has been done in the Lobo Mountains upon a group of claims containing copper carbonate ores, two surface samples of which have assayed, respectively, 2.71 and 17.1 per cent. in copper, with a trace of gold in each.

The mineral industry of the Philippines as a whole has made notable progress in the past year, and with the islands at peace and under a safe and stable government, with no labor problem that cannot be overcome, with increased transportation facilities in sight, with more confidence on the part of capital and a better showing on the part of prospecting and development work, a conservative estimate would indicate a bright outlook for the coming year of 1906.

W. L. C.

### Labor Notes.

Comment is made in British journals on the August report of the Iron Founders' (molders') Union. The increase over the preceding month in members "on the funds" was 198; in members on donation benefit the increase was 203. The report shows that the increase was solely due to the Stockton and Middlesbrough races. At the former place there were 122 members on the 9s. per week scale of out-of-work pay, and at the latter 141; total, 263. In the previous month, when there were no races, there were 15 at Stockton and only three at Middlesbrough on the funds; therefore, the report says, 245 members came in for unemployed benefit due to the above named races. Otherwise there would have been an aggregate decrease on donation benefit in the month. In other branches, it is stated, a very large amount was paid out for the holidays.

The Administrative Council of the National Metal Trades Association will hold its semiannual meeting in the offices of the association at Cincinnati on October 18 and 19. A programme of subjects to be discussed, largely of routine matters, is being prepared. Commissioner W. P. Egan is requesting the members who may have anything that they desire presented to the council at this meeting to advise him promptly, so that the subject may be presented at the proper time. The members of the council are as follows: J. W. Gardner, J. W. Gardner Governor Company, Quincy, Ill.; F. A. Geler, Cincinnati Milling Machine Company, Cincinnati, Ohio; W. D. Sayle, Cleveland Punch & Shear Works Company, Cleveland, Ohio; F. K. Copeland, Sullivan Machinery Company, Chicago, Ill.; G. F. Steedman, Curtis & Company Mfg. Company, St. Louis, Mo.; M. H. Barker, American Tool & Machine Company, Boston, Mass.; P. B. Kendig, Seneca Falls Mfg. Company, Seneca Falls, N. Y.; John Kirby, Jr., Dayton Mfg. Company, Dayton, Ohio; O. B. Kinnard, Kinnard-Haines Company, Minneapolis, Minn.; C. E. Hildreth, Whitcomb-Blaisdell Machine Tool Company, Worcester, Mass.; C. Birmingham, Canadian Locomotive Company, Ltd., Kingston, Ont.; G. K. Garvin, Garvin Machine Company, New York; W. H. Pfahler, Abram Cox Stove Company, Philadelphia, Pa.

A new relief association has been formed among employees of the hoop mills of the Carnegie Steel Company, at Youngstown, Ohio. The old association went out of existence when the strike started last year, and the new one is formed along the same lines as the old one.

The Darlington Forge Company, Darlington, England, has orders for the stern frames, rudder &c., for the latest Cunarders, which will be among the largest vessels in the world—namely, 785 feet long, with a carrying capacity of 30,000 tons. Each stern post weighs 47 tons, the aft propeller brackets 22½ tons, the forward brackets 24 tons and the rudder 70 tons.

# HARDWARE

THE effectiveness of organization among the Hardware trade finds an interesting illustration in the action taken by practically every Hardware association when the recent order of the Post Office Department relating to rural routes was brought to their attention in the columns of *The Iron Age* of September 21. In that issue, as our readers will remember, the order in question was for the first time brought out into the light of publicity and its injurious effect on retail, and, indeed, on wholesale interests, pointed out. Without organization in the trade it is certain that the feeling of the merchants in regard to the danger which threatened would not have found anything like adequate expression, limited as it would have been to the protests which would have gone to Washington from individuals public spirited enough and sufficiently enterprising to have taken this action. As it was, promptly on the publishing of the facts in the case the matter was taken up by the secretaries and other officials of the associations, wholesale and retail, and the result was that protests from these organizations and individuals influenced by them went to Washington in such numbers, and fortified with such substantial arguments, that the objectionable order was suspended for a time. So promptly, indeed, was this action taken by the Department at Washington that we were permitted to announce the suspension of the order in the very next issue of *The Iron Age*—a single week only having elapsed.

It is interesting to note that while merchants in every branch of business are almost equally interested in this matter, it fell to the lot of the Hardware trade to make an organized protest, the result being, as stated by our Washington correspondent in this issue, that the letters representing Hardware interests were far more numerous than those from merchants in any other line of business.

While many of our correspondents refer to the part taken by *The Iron Age* in calling attention through its columns to this matter and in sounding a warning note as illustrating the value of a vigilant journalism, we desire rather to congratulate the trade on the practical value of organization among the merchants and manufacturers, permitting the sentiments of the trade to be uttered as occasion offers, in definite and authoritative tones, and with a promptness and directness which the exigencies of the case demand. We refer to this matter because it is not unlikely that further occasions may arise in which it will be advisable to make known to the authorities in Washington what the interests of the trade require in matters legislative and administrative.

At the present time, while the market as a whole is decidedly strong and in many lines advancing, there is a marked weakness in Tire and Stove Bolts, the prices of which are badly demoralized. The reason for this condition in a line which is of secondary importance is significant. There is general agreement among the manufacturers that it is owing to the rapid increase during the years of prosperity in the productive capacity of the factories manufacturing these goods, so that now the output largely exceeds the demand, even in these days of busi-

ness of surpassing volume. In all this there is an illustration indeed of the enterprise of the American manufacturer, who is constantly adding to his facilities, discontented unless each year chronicles a respectable if not large growth. In this way the development of the country is anticipated too rapidly, and the trade is sooner or later confronted with an overproduction. In an era of unparalleled trade enterprise the question arises as to when in many another line a similar condition will be experienced.

## Condition of Trade.

The volume of current business is unquestionably very large. Many manufacturers report orders on their books as covering more goods than has been the case for a long time, and their capacity is in many instances overtaxed. Delay in getting material is causing some inconvenience. The shortage of cars and the limitation of transportation facilities are already recognized as interfering somewhat with the course of business, and as the season advances more trouble is to be expected from this source. Jobbers and merchants generally who attempt to forecast the future are endeavoring to have their stocks in such shape as to be able to take care of their trade and avoid a depletion of goods. A most favorable opportunity is certainly presented to the jobbers to serve the trade efficiently as intermediaries between the manufacturers and the retail trade, and if they are in a position to supply goods promptly it will undoubtedly be greatly to their advantage. In this condition of things, too, there will be less occasion than is usually the case for the cutting of prices, a practice which frequently causes so much irregularity in the market. A number of advances are to be noted, especially in heavy goods. In a few instances there is more or less irregularity, as reported in detail elsewhere. These cases are, however, quite exceptional and serve rather to bring into prominence the steadiness, the strength and the upward trend of values in practically all lines into which Iron enters.

### Chicago.

Notwithstanding the heavy buying of all classes of seasonable goods last month the past week shows no lessening of demand, and Hardware jobbing interests generally are of the belief that the present month will average well with August and September. The sales of Stoves, Stove Boards, Pipe and Elbows promise to eclipse all records, and despite the mild weather which has prevailed throughout the West and Northwest filling in orders are growing more numerous. The general prosperity prevailing throughout this entire territory augurs well for a continued heavy fall trade, and while the buying of holiday goods has not yet commenced jobbers are preparing for a big trade. Heavy shipments of fall goods, including Lanterns, Axes, Cross Cut and Buck Saws, Manure Forks, Husking Gloves, Corn Knives, &c., are now going forward to retailers. The reduction in the price of Hatchets announced last week is considered ill timed by some of the Western jobbers, as it is extremely doubtful that trade will be stimulated by such a decline at a time when practically all other lines are advancing. While the sale of Edged Tools has not been up to expectations it is hardly the season of the year when a large movement is expected. The recent advance on Wire Nails and Wire products has to some extent checked the buying of large consuming interests, and it is believed

that the advance was largely made to bring about this result in order to prevent any speculative buying and to force the delivery of goods into the proper seasons of the year. Mechanics' Tools of all kinds are moving well, especially fine Tools such as are used by machinists. Demand for Black and Galvanized sheets has improved materially and there is a fair movement of Corrugated material. Jobbers report collections unusually good for this season of the year, especially since it was generally believed that collections would be slow on account of the heavy crops, which are now being moved. Dealers in Builders' Hardware are figuring on the equipment of a large building in this city, which is now nearing completion, and a number of additional structures which will be completed this fall will carry the trade well through the winter months.

### NOTES ON PRICES.

**Wire Nails.**—Demand upon the mills continues heavy, both in the way of new business and specifications on contracts. Car shortage is being felt to a considerable extent and this will undoubtedly as the season advances become an important factor in delaying shipments. Steel continues to be difficult to obtain. Under these circumstances it behooves the trade to lay in stocks without delay. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers.....\$1.80  
Carload lots to retail merchants..... 1.85

**New York.**—Demand is exceedingly active, and jobbers are experiencing difficulty in keeping stocks well assorted. Most of the jobbers still have unexpired contracts for Nails made before the two recent advances and some are not yet asking the full advances. To this extent the market is somewhat irregular. Regular quotations for small lots from store are, however, \$2 to \$2.05, base.

**Chicago.**—There is no falling off in the demand for Wire Nails, and the tonnage booked during the first week this month already exceeds that during the same period in September. The advance has evidently failed to check the buying movement which began in August and the mills are already buying heavily for future delivery. Official prices are being well maintained by the independents as well as the leading interest. Official quotations are as follows: \$1.95 in car lots to jobbers and \$2 in car lots to retailers, with 5 cents higher for less than car lots from mill.

**Pittsburgh.**—Tonnage in Wire Nails continues exceedingly heavy, and specifications on contracts placed before the recent advance of \$1 a ton in prices are coming in very freely. This is due to the fact that further advances in prices of Wire Nails are considered not improbable and also because of the delay in shipments by the mills, owing to shortage in cars and supply of steel. With the breaking up of the weather there is bound to be considerable delay in shipments, and jobbers are accumulating as large stock as possible before this takes place. The market is very firm, and we are advised that official prices are being rigidly held. We quote Wire Nails at \$1.80 in carloads to the largest jobbing trade, which is the absolute minimum of the market, and \$1.85 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days.

**Cut Nails.**—An anticipated advance in price is stimulating business to some extent. The market is generally firm at the price agreed upon by members of the Cut Nail Association. Quotations are as follows: \$1.65, base, for carload lots, f.o.b. Pittsburgh. Iron Cut Nails for delivery at Pittsburgh, Buffalo and all points west of these cities are held at \$1.75, base, in carload lots.

**New York.**—Local demand is fair and in about the usual proportion to that of Wire Nails. Quotations for small lots from store are on the basis of \$1.90.

**Chicago.**—While the agreed prices on Steel Cut Nails are on the basis of \$1.80, Chicago, \$1.77½ can be done on large lots to jobbers. Demand is reported good and the

reaffirmation of prices, notwithstanding the shading of a few mills, has generally strengthened the situation. We quote Steel Cut Nails in car lots to jobbers \$1.77½ to \$1.80; car lots to retailers, \$1.85; and less than car lots, \$1.90; small lots from store, \$2, base. Iron Cut Nails are firm at \$1.85 in carload lots.

**Pittsburgh.**—Demand for Cut Nails is showing steady improvement, both jobbers and the small trade placing liberal orders in view of an expected advance in prices. We quote Cut Nails \$1.65, base, in carload lots, f.o.b. Pittsburgh, an advance of 10 cents per keg being charged for Iron Cut Nails.

**Barb Wire.**—Demand has been beyond the expectation of manufacturers since the recent advance. The market is firm, with a good volume of business. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots .....	\$1.95	\$2.25
Retailers, carload lots .....	2.00	2.30
Retailers, less than carload lots.....	2.10	2.40

**Chicago.**—Notwithstanding the off season the demand is comparatively heavy, and the tonnage already booked since the late advance became effective is a surprise to the manufacturers. Jobbers report a fairly heavy movement. Official quotations are as follows: To jobbers, Chicago, car lots, Painted, \$2.10; Galvanized, \$2.40; to retailers, car lots, \$2.15; Galvanized, \$2.45; retailers, less than car lots, Painted, \$2.25; Galvanized, \$2.55; Staples, Bright, in car lots to jobbers, \$2.05; Galvanized, \$2.35; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

**Pittsburgh.**—We note an active demand, the trade placing very liberal orders, and the mills are well filled up with tonnage. There is considerable delay in shipments, owing to shortage in supply of cars and scarcity of Steel. We quote Painted Barb Wire at \$1.95, and Galvanized at \$2.25 in carload lots to the large jobbing trade, with the usual advance of \$1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days.

**Smooth Fence Wire.**—The recent advance in price has not put a damper on the placing of orders with mills. Those who had already placed orders are sending in liberal specifications for immediate shipment. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads .....

Retailers, carloads .....

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized.....	\$0.30	.35	.40	.45	.55	.65	1.05	1.15	

**Chicago.**—The recent advance of \$1 a ton on Annealed Wire has evidently not checked demand, and contracts calling for heavy tonnage continue to come forward. The mills continue in good position to make prompt deliveries, but are already hampered on account of the shortage of cars, which promises to become more acute later in the year. Quotations are well maintained, as follows: \$1.80 to jobbers, f.o.b. Chicago, in car lots, and to retailers, car lots, \$1.85.

**Pittsburgh.**—Tonnage in September in Annealed Fence Wire broke all previous records and business this month promises to be fully as large. The large trade covered itself pretty well before the recent advance in prices and is specifying very liberally on these contracts. The market is firm and official prices are being rigidly held. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads .....

Retailers, carloads .....

The above prices are for base numbers, 6 to 9.

**Vitrified Sewer Pipe.**—In the eastern section of the country, including the west line of Indiana, the American Sewer Pipe Company of Pittsburgh, Pa., practically controls the vitrified sewer pipe market.



This part of the country is territorially divided, and established discounts are maintained from the list adopted by the manufacturers December 19, 1901.

Manufacturers located west of the west line of Indiana use the Western list, which has been in existence for a number of years and is lower than the list used in the Eastern portion of the country. The weight per foot of pipe and branches differs in the Western lists of various manufacturers. As no agreement exists as to prices, there is a variation in the discounts of different makers. Prices in the East for standard pipe and fittings, 2 to 24 inch, are as follows, 60 days, or 2 per cent. discount for cash in ten days, with the usual rebates to the jobbing trade:

New England.....	68 %
New York and New Jersey.....	71 %
Maryland, Delaware, eastern Pennsylvania.....	75 %
Western Pennsylvania and West Virginia.....	77 %
Virginia.....	76 %
Ohio, Michigan and Kentucky.....	77 %
Indiana.....	77 %

Carload lots are usually delivered.

West of Indiana the following discounts fairly represent the market in different sections:

Macomb Sewer Pipe Company, Macomb, Ill., quotes as follows, f.o.b. factory:

3 to include 6 inch.....	77½ %
8 to include 12 inch.....	75 %
15 and 18 inch.....	70 %
20 and 24 inch.....	65 %

Denver Sewer Pipe & Clay Company, Denver, Col., is naming the following quotations in carload lots:

3 to 6 inch.....	65 %
8 to 12 inch.....	60 %
15 and 18 inch.....	55 %
21 to 30 inch.....	50 %

The prices quoted by Chicago Sewer Pipe Company, Chicago, are represented by the quotation of 72 per cent. on 3 to 6 inch pipe to 60 per cent. on 20 to 24 inch.

**Registers.**—Although the season for booking large contracts for Registers has passed, manufacturers report a continuance of good orders to fill up depleted stocks. There is, in fact, some difficulty in securing prompt shipments of sizes most in demand. For these reasons and on account of the harmonious accord of the manufacturers prices hold firm at 70 to 70 and 10 per cent. discount, and are referred to as likely to remain indefinitely on the present level. Increased attention is being paid to wrought steel goods, which afford a considerable saving of weight and space on long hauls and are not liable to breakage. These advantages are especially studied as applied to shipments to the West and for the export trade.

**Bolts, Carriage, Machine, &c.**—It may be said that firmness is still the characteristic feature of the Bolt market, especially as regards the output of manufacturers not already contracted for. Probably the lowest quotations now current are being made by jobbers who purchased their stocks at considerably lower prices than are now obtainable and are embracing the opportunity to distribute them quickly at a fair margin of profit. The following prices may be taken as representing the market in a general way:

Common Carriage Bolts (cut thread), ½ x 6 and smaller	75 and 5 to 75 and 10 %
Common Carriage Bolts (rolled thread), ½ x 6 and smaller,	75 and 10 to 75, 10 and 5 %
Common Carriage Bolts (cut thread), longer and larger	70 to 70 and 5 %
Bolt Ends.....	70 to 70 and 5 %
Machine Bolts, ½ x 4 and smaller.....	75 and 5 to 75 and 10 %
Machine Bolts, longer and larger.....	70 to 70 and 5 %

**Sheet Iron Ware.**—While most of the manufacturers in this line are working together in harmony, and thus securing a general regularity in prices, there is enough outside competition to have some effect on the market. Under this influence slightly lower quotations are sometimes made to close buyers on such goods as Coal Hods, Galvanized Pails, Washtubs, &c.

**Snow Shovels.**—The requirements of the jobbing trade on Snow Shovels were presumably covered some

time ago. The market is represented fairly by the following quotations: Long Handle, per dozen, \$2.75 to \$3; D Handle, \$3.25 to \$3.50. Concessions are obtainable on large lots, and some goods of less prominent manufacturers are quoted from 25 to 50 cents less than the above.

**Wire Coat and Hat Hooks.**—The strength of the Iron market has caused a slight advance in the price of Wire Coat and Hat Hooks, which now may be quoted to the general trade at about discount 75 and 10 per cent.

**Blacksmiths' Vises.**—The market for Solid Box Vises is decidedly strong and the manufacturers have recently announced higher prices covering advances of from 10 to 15 per cent. In a general way the small and medium sized Vises may be quoted at a discount of 60 per cent., but this is frequently if not usually shaded by jobbers who have a stock on hand.

**Wedges, Crowbars, &c.**—Heavy goods of this character, sympathizing with the advancing iron market, are held very firmly and at slightly higher prices. The manufacturers are well supplied with orders and refer to the demand as being exceptionally heavy.

**Bolts, Stove and Tire.**—The irregularity, amounting to demoralization, referred to last week still governs prices on Stove and Tire Bolts and the opinion is expressed that no immediate improvement may be looked for. This condition is attributed to an overproduction amounting at present to a very considerable percentage of the consumption of these commodities. Manufacturers have increased their facilities largely within a few years and new competition has sprung up, so that the productive capacity is now far in advance of the demand. It is probable that competitive efforts to dispose of the excess output will bring about a corrective readjustment of the supply; otherwise the situation will show no permanent improvement until history repeats itself and production is again overtaken by the demand attendant on the growth and expansion of the country. Tire Bolts may be quoted at 80, 10 and 5 per cent., additional concessions being frequently made to close buyers, while Stove Bolts are obtainable at base discounts of 85 or even 87½ per cent., with extra discounts following at least the first of these figures.

**Rope.**—Demand is active and manufacturers are busy filling orders. The reported destruction of Manila Hemp by the recent typhoon has not yet affected the market for Rope, which continues regular, the following being the base prices for 7-16-inch diameter and larger: Pure Manila, 11¼ to 12 cents; Pure Sisal, 10 cents; No. 2 quality Sisal, 8 cents per pound.

**Window Glass.**—Local demand is quiet, owing to the mild weather and to the fact that merchants are not purchasing beyond their immediate requirements. This condition appears to be more or less general throughout the trade, owing also in some measure to the unsettled conditions in the trade. The last conference held between the National Association of Window Glass Manufacturers and the workmen's union favoring the flat wage scale failed to bring about a working agreement on the basis of the sliding scale. Another conference is scheduled for the near future. It has been intimated that if this, too, proves a failure some of the plants may draw their fires rather than operate under the flat scale. Cold weather will create a demand which will make inroads on jobbers' stocks, and indications do not point to lower prices in the near future. New York quotations are as follows: First two brackets, single and double strength B, 90 and 10 per cent. discount; all other sizes, single and double strength, 90 per cent. discount.

**Linseed Oil.**—The local demand is active, but for small lots. Jobbers of State and Western Oil find it difficult to obtain the Western product, as crushers can obtain a higher price in the West than in the East. Futures are being offered on the basis of 35 cents per gallon for State and Western, in some instances up to July 1, while other crushers will not accept contracts beyond December or January, as they are not sure of the future of the cake situation. Buyers are generally

holding off for lower prices. New York quotations for prompt delivery are as follows: City Raw, 45 to 46 cents per gallon; State and Western Raw, 43 to 44 cents per gallon, according to quantity.

**Spirits Turpentine.**—During the week under review prices have advanced over 2 cents per gallon, in sympathy with the Southern market. Prices have now reached a point where substitutes are being used. Buying at this point is restricted in volume owing to high prices. New York quotations are as follows, according to quantity: Oil barrels, 71 to 71½ cents; machine made barrels, 71½ to 72 cents.

### JOHN L. SARDY AND FOREIGN TRADE.

**J**OHN L. SARDY of John L. Sardy & Co., Saracen House, Snow Hill, London, E. C., is now in this city completing arrangements for a business trip around the world, covering especially the important markets of the Eastern hemisphere. Mr. Sardy is a member of the Hardware Club of New York, where he may be addressed. His firm is a well known representative in London for American manufacturers, and among those represented by them are R. E. Dietz Company and National Meter Company. During Mr. Sardy's absence the business will be carried on as usual by his partners and their efficient corps of travelers. Mr. Sardy's trip is expected to occupy about two years, during which time he will visit South Africa, India, Burmah, Ceylon, the Straits Settlements, Java, the Philippines, China, Japan, Australia, New Zealand, and the Hawaiian Islands. In an interview concerning his trip Mr. Sardy explained the object of his trip and the method to be pursued:

This undertaking on my part is in no way an experimental venture, as I have made the trip before and was instrumental in substantially increasing the export business of the American manufacturers whose interests were placed in my hands. The only basis on which such a trip is possible is for the traveler to become practically the paid employe of the firms represented.

Taking it for granted that the man going on such a journey is the right one for the work, there are two other very important essentials: Plenty of time, which also means ample funds. To hurry through the places visited is not a bit of use. The conscientious man must do full justice to each manufacturer represented. Suppose, for instance, he represents say six different lines, he must then remain in each place visited about six times longer than if he represented one company only. In other words he must not leave until every effort has been made to secure business for each manufacturer employing his services. In this way, provided the line of goods be suitable, the manufacturer is bound to have full value received, not only in the way of actual business, but also reliable information as to the names of the firms to do business with, their commercial standing, the class of goods they purchase, the marks under which they buy and the names of the commission houses either in New York or London through whom they purchase.

It may not be generally known to your readers that the Colonial and Eastern houses as a rule do not give actual orders to the traveler calling upon them. It is the traveler's business to show the manufacturer's samples and intelligently explain the merits of the goods. No order is given to him at all, but the buyer makes a list of the articles he intends to include in the next indent or order he sends to his buying house in New York or London. All the traveler can do is to send in a copy of the order, which the manufacturer will receive in due course through the export shipping firm handling the customer's business. This custom not only benefits the manufacturer but the export merchant as well.

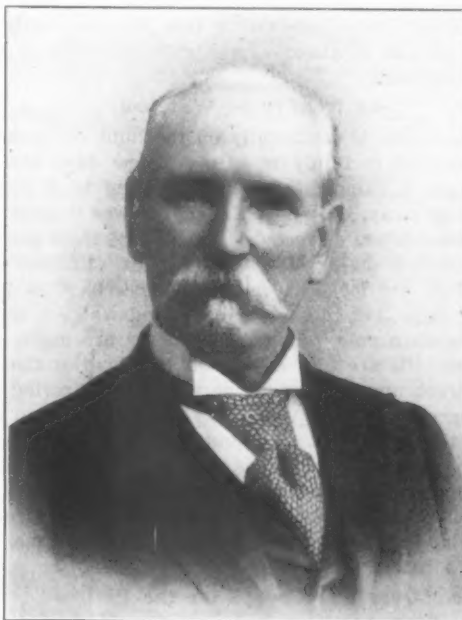
The importance of approaching the actual buyer cannot be too strongly impressed upon the manufacturer. The commission merchant is powerless to buy unless he has instructions to do so from his client abroad, and it is therefore almost a waste of time to solicit business from the exporter. In other words, the manufacturer must assist the exporter. He should go to the fountain head, to the man who really buys and sells. The large manufacturers in this country think nothing of employing able and therefore expensive travelers to solicit business from their American customers, but many of them hesitate to tap a foreign fertile field in the same way, simply because it happens to be beyond their domestic threshold.

Mr. Sardy will carry full lines of samples and will

probably conclude arrangements to represent one or two additional American houses in London and abroad. He expresses himself confidently in regard to the prospects for American goods in English and the Colonial and other foreign markets, and is hopeful that his extended trip will result in opening up new and important outlets for American products.

### DEATH OF BENJAMIN F. ATKINSON.

**C**OL. B. F. ATKINSON, president of the Atkinson-Williams Hardware Company, Fort Smith, Ark., died September 22, in Denver, Col., of Bright's disease.



COL. B. F. ATKINSON.

Colonel Atkinson was born at St. Louis, Mo., September 27, 1837, and moved to Fort Smith with his father, who is credited with establishing the first Hardware business in the State, in 1843. After the Civil War B. F. Atkinson was admitted to partnership with his father under the name of J. C. Atkinson & Son, and succeeded to the business upon his father's death in 1877. Later a corporation was formed known as the Atkinson Hardware Company, which was continued until January 1, 1900, when Buck Williams was admitted to the firm as vice-president and manager.

Mr. Atkinson was one of the oldest and most highly esteemed residents of Fort Smith, and was for six years president of the American National Bank, of which he was also one of the founders. Mr. Atkinson was a member of several organizations but his chief interest was in Masonry, in which he occupied high and important offices. Though genial and friendly with all, his associations were not general, although always of the best. He was a strong man and his life and example has left its impress on the history of his city and State.

The business will be continued as heretofore under the management of Mr. Williams and Benjamin P. Atkinson, such changes as may be necessary being made by choosing from the company's present officials. Mr. Atkinson is survived by a widow, one son, B. P. Atkinson, treasurer of the company, and a granddaughter.

The Hanscom Hardware Company, Haverhill, Mass., has purchased the business of G. E. Durgin and will continue running his store as a branch.

G. H. Goecke of Triumph, Minn., has opened a Hardware store at Nashua, Minn., handling Shelf Hardware, Stoves, Tinware and Paints.

C. N. Moore has opened a Hardware, Stove and Sporting Goods store at Litchfield, Neb.



## A HARDWARE MERCHANT'S FREIGHT ACCOUNT.

BY H. C. W.

**I** WONDER how many of us give much or any thought to the matter of freight until it comes up at the end of the year as a sum total of expense almost too great to contemplate. We are all too prone to take it as a part of the cost of goods on the shelf, as they are placed there day after day, be it large or small, correct or incorrect. Looking at an ordinary billing of goods to a merchant it costs 2 or 2½ or 3 per cent. to deliver, and is let go at that. Very often the question as to the correctness of the expense or foreign account is not considered, and yet I take it, for short hauls in particular, nearly if not quite one-half of this item is clearly on the side of and in favor of the railway company and not the merchant.

### An Item to be Watched

by the man who is continually on the hunt for leaks in his business it certainly is. Only a few days since a house made a shipment of Binder Twine to a station but 7 miles away, on which the charge was 9 cents per 100 pounds. When corrected it became 6½ cents per 100 pounds, quite a saving on a ton of goods. Railroads as corporations are looked upon by the merchant as hard to collect from, but in cases of this kind where a schedule exists, as a rule, prompt settlements are made, and if expense bills are filed away and taken up at the end of each week and checked up carefully as to rating you will be surprised at the number of pennies that run into dollars—the size of the account to be presented each week for correction rebates. Again, you will find quite a difference for your own firm, or that of a customer, both in shipping and receiving, in calling up your freight office, or having it called up for you in the other case, and securing a rate.

### The "Over" is Always for the Railroad

and never for the customer, unless systematically watched and presented in this way. It may be only a penny or a few of them on one bill, and the same on another, but the sum total that these small errors make, whether intentional or otherwise, will surprise you greatly at the end of the year. Some one quick at figures can take the matter up in a few minutes each week, and will find himself well paid for the time given it.

It is a good idea, where possible, to secure a classification or schedule and pin it above the desk. In smaller towns perhaps this cannot always be done, and in such cases the merchant is almost at the mercy of the railroad shipping his goods, unless he can manage to make one up for himself through inquiries from his freight office.

In cases where goods are supposed to be delivered, or are f.o.b. to the merchant, the overcharges are likely to creep in to the detriment of the shipper, and unless promptly attended to cause him trouble and expense, as witness

### A Case in Illustration

Under date of May 26 a shipper wrote us as follows:

We received your remittance a day or two ago, with deduction of 84 cents for freight paid on last invoice. Will you kindly send us the original paid freight expense bill, so that we can check up the credit, and in future, as we are selling you practically f.o.b. Columbus, less freight, will you not make a memorandum to always send us the expense bill as soon as the freight has been paid? The reason we ask this is that many times we find the railroads overcharge us in freights on less than carload lots to points shipped from Columbus, and we therefore want to check up your freight charges and have original expense bill on hand so that we can make a claim promptly in case we are entitled to make one. This matter amounts to very many dollars to us in the course of a month.

The above comes from a large shipper out of Buffalo and is only one of many others we frequently receive from parties whose goods are supposed to come to us f.o.b. destination, or point of delivery. It plainly shows that if it pays the large merchant to watch his freight account it certainly pays the smaller one or the retailer.

### Do Jobbers Prepay Freight to Retail Merchants?

This question is often asked, and has been one of those from the Question Box at a number of association

meetings. It can be answered positively in the negative; they neither prepay freight nor make freight allowance to be deducted, except it be in extreme cases of large orders on what are classed as delivered goods, and then only for factory or direct shipment. Freight may be and is sometimes allowed by the jobber who is standing in place of the manufacturer on such lines as steel goods, Nuts and Washers, Bolts and Screws, Poultry Netting and like goods, for stock orders or spring or fall shipments and where quantity would bring the same terms from the maker of the goods.

The writer knows of no cases in the ordinary line of purchases from jobbers where this allowance is made. It is not as a rule expected by the retailer and seldom asked for. It is in no sense customary in this section of country and is taken as a part of the jobber's profit. While he largely gets delivery from the manufacturer he does not give it away. The average retailer's purchases from the jobber are of the "filling in" class, not case lots as a rule of anything, not those purchases on which he might ask for the freight.

### Freight Paid by Manufacturer

to the retailer is not universal, though very often a part of the contract; and, to split words, it is not prepaid then, but is allowed, to be taken off at settlement. This latter is almost universal—i. e., the freight expense where contracted for is taken from the invoice when remittance is made. It is a rare case, indeed, where the actual prepayment of freight is made and the goods delivered free at your depot. The writer recalls that in carload lots the makers of Nails and Wire frequently make this contract and abide by it, but it is entirely a special one. The cabalistic "f.o.b." seldom means what it calls for when preceding destination, and the maker of goods who is supposed to deliver them has the use of his money that would otherwise be prepaid for freight until it is taken off at the other end, making quite a financial distinction and a "difference."

### Watching Freight Accounts and "Freight Allowed" Pays

if for no other reason than for the last one—that it is taken off at settlement. How many of us are there who overlook and forget altogether that this is a part of the contract; that it exists on our carbon copy or the order book, and perhaps months after the bill is paid may run across it. In seven cases out of ten, I venture, the "less freight" does not appear on the invoice. It may not be left off purposely on the part of the shipper, but if purposely or for any reason it is our business to watch our end of a contract. No one of us can estimate the losses that occur each year through neglect in checking up our orders, both losses as to freight rates and as to allowance lost sight of. Set an hour in the week for going over them, checking and rating them; I'm sure it will pay every merchant over and over again for the time given to it.

THE SMITH & EGGE COMPANY, Bridgeport, Conn., has secured a machine for rolling the metal used in the manufacture of the company's Giant Metal Sash Chain, a process which was hitherto considered impossible, so hard is the metal. The result is a uniformity of metal which is advantageous both in manufacturing the chain and in its excellence. Giant Metal is an alloy of pure copper and pure tin, phosphorized. While its tensile strength is a feature, this is not sought so much as antifrictional quality, to reduce as much as possible the wear of the chain, link working on link. At the same time such an alloy is insensible to atmospheric conditions, an important feature of Sash Chain.

THE D. M. STEWARD MFG. COMPANY OF CANADA, LIMITED, Toronto, has been incorporated for the manufacture of Acetylene Gas Burners in Canada and also to act as selling agent for the D. M. Steward Mfg. Company of Chattanooga, Tenn. The company states that it is doing a good business in Canada in the line of Metal Workers' Crayons and Soapstone Slate Pencils, which have been manufactured and sold by the Chattanooga company for the past 30 years.



## TRADE WINNING METHODS.

*This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.*

### KITCHEN KNIFE AD.

THE advertisement reproduced herewith has been used with good effect by an Eastern retail house in calling attention to its line of Knives for kitchen use. The reproduction is about two-thirds actual size. While prices

## ONE SAND-PIPER DOES NOT MAKE A SEASHORE.

Neither does any old knife make a real help in the kitchen. She, who works away, day in and day out, in the kitchen, needs a decent knife, and she needs more than one kind, too. There should be special knives for special purposes—not because we say so and sell them, but because it is truth. Paring knives and bread knives—Christy or other kinds, big cook's knives for meats and heavy cutting and regular kitchen knives that will do anything from cutting kindlings to scraping the table. Remember, we are headquarters for this sort of goods, and that we have nothing but reliable stock. We don't like to make this statement so pointed, but conditions force us to do so. And, too, our prices will save money for any housewife.

are not given it will be noticed that reference is made to them in a way that conveys the idea that they are reasonable and within reach of the average purse.

### AN EFFECTIVE CATALOGUE.

L. W. GUNBY COMPANY, Salisbury, Md., wholesale and retail Hardware, machinery, &c., has recently issued a catalogue and price-list for the season of 1905-1906 especially devoted to the company's department of machinery and supplies for saw mills, planing mills, stave and heading mills, flour and grist mills, Crate and Basket Hardware, canning machinery, &c. The catalogue contains nearly 70 pages, 9 x 12 inches in dimensions. The second page of the cover presents illustrations of the office and sales department, the machine shop, which is devoted to the manufacture and repair of both iron

#### STOVE BOLTS



Stove Bolts are useful for many purposes. For fastening hinges they are cheap and good. For many uses they take place of carriage bolts at much less cost.

Cut shows countersunk head. We also furnish round head when desired.

and wood working machinery, and warehouse No. 1, which is located on railroad. A feature of this interesting and creditable catalogue worthy of special mention is the data or text accompanying the illustrations of each article or line. The attempt has been made to give as full information as feasible in regard to the construction and special features or advantages of the goods together with suggestions as to their uses. Illustrations of the way in which this is done in connection with Stove Bolts

and Hand Carts are given herewith. Referring to the Saw Guide offered for sale by the company the catalogue has the following to say:

The accompanying cut represents our New Adjustable Saw Guide designed for portable mills. In presenting our Adjustable Guide we do so with the assurance that it is one of the best and most practical Guides on the market. The Guide is reversible and adjustable. The adjustment of the Guide Pins is easily accomplished without danger to the operator while the saw is in motion. The adjustment can be made at

#### Hand Cart

Carts of this kind are growing in popular favor daily. Painters, carpenters, bill-posters, masons find they are ahead of anything else for carrying tools and light material. Farmers, too, use them to good advantage about the orchard and garden. Mill men use them for cleaning up refuse, etc.



No.	Diem. Wheels	Diem. Axle	Size Box	Depth Box
0.	42	1	48x28	10
1.	36	¾	40x23	10
2.	30	¾	32x20	9

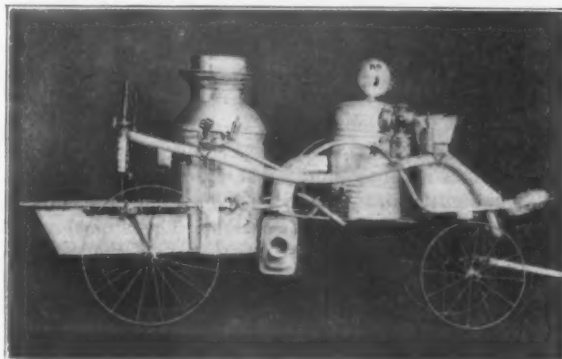
Prices on Application.

a distance of 12 inches from the saw. To change the lead of the saw a slight turn of the hand wheel in the direction required is all that is necessary. Every sawyer will appreciate the above two features of our Guide, as the adjustment of Saw Guides, often necessary and desired while the saw is in motion, has heretofore been accomplished with more or less danger, inconvenience and loss of time. Being reversible, our Guide can be used on a right or left hand mill or turned back to remove the saw without displacing the Guide.

Prices, net or subject to discount, are given generally in the catalogue, though in a few cases they are omitted with the intimation that they will be furnished on application.

### HARDWARE FIRE ENGINE.

DURING a recent firemen's convention at Lyons, N. Y., Zimmerlin Bros., Hardware merchants of that place, exhibited in their show window the attractive fire engine, made up out of Hardware, which is illustrated herewith. In the construction of the exhibit the following articles were used: Four Cart Wheels, ¾-inch Gas Pipe, 30-quart Milk Can, 5-gallon Kerosene Can,



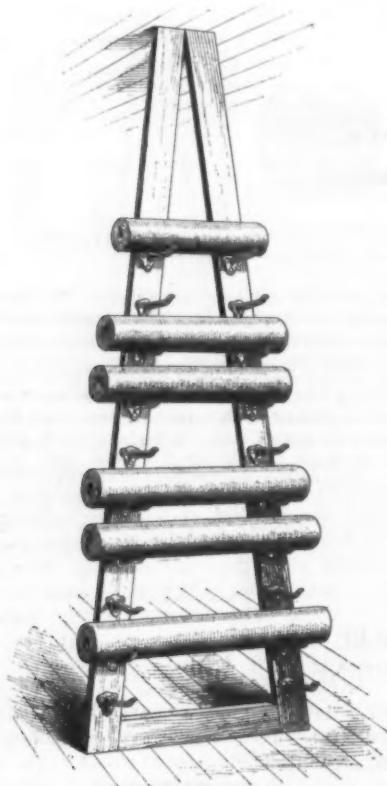
Hardware Fire Engine.

Dinner Pail, two Bicycle Lamps, Bread Pan, Furnace Flue, Dust Pan, Steam Gauge, Ash Pan, Door Bell, Valve Float, Bicycle Tire Inner Tube, two Horse Muzzles, Water Glass and 1-inch Rubber Hose. C. H. De Golyer, one of the clerks in the store, is to be credited with the getting up of the exhibit, which was the "talk of the town" for several days.

### AN ECONOMICAL SCREEN WIRE RACK.

THE Screen Wire Rack shown in the accompanying illustration is economical both in view of its small cost and the space occupied by it. It is in use in the Hardware store of Geo. W. Woods, 186 Newark avenue, Jersey City, N. J., and is a home made affair. The Rack

is made of material  $1\frac{1}{4} \times 3\frac{1}{2}$  inches, and with a view to making it rigid it extends from the floor to the ceiling, though the top hooks are only about 7 feet from the floor. Six-inch Harness Hooks are used to hold the wire, the Hooks being placed 8 inches apart on the uprights. The spread at the bottom is sufficient to accommodate 36-inch cloth, the Hooks at the top taking 18-inch cloth. Although not shown in the illustration there is a duplicate set of Hooks on the other side of the uprights. On



An Economical Screen Wire Rack.

one side green cloth is kept and on the other figured cloth. If only one kind of cloth is sold the opposite side could be used for reserve stock or remnants.

## SYNOPSIS OF GAME LAWS.

**J**OHAN B. VARICK COMPANY, Manchester, N. H., which is a large handler of Sporting Goods, Firearms, Ammunition, &c., has hit upon an effective method of getting the sportsmen's attention. The appeal takes the form of a substantial card about 8 x 14 inches, suitable for posting in hotel offices, stables, camps and the like, bearing an accurate synopsis of the game laws of New Hampshire and Vermont, with penalties for infringement. The card is attractively printed in two colors and is set off by a sketch of a hunting camp in the woods, which is sure to appeal to any one with a taste for roughing it.

The Union Metallic Cartridge Company, 313-315 Broadway, New York, through its advertising department, is prepared to supply the trade gratuitously with a variety of illuminated Display Cards and Hangers for store and window display which call particular attention to the product of this company. They are especially suitable for Hardware and Sporting Goods stores.

The Nebraska Hardware Company, Lincoln, Neb., capitalized at \$100,000, has been organized to take over the business and stocks of the Humphrey Hardware Company and the Patterson Crosby Company, both of Lincoln. The officers of the new concern are: William Patterson, president; W. E. Jakway, vice-president; Allen Crosby, secretary; John Forrest, treasurer.

## CONTENTS.

	PAGE.
The Henry R. Worthington Hydraulic Works. Illustrated.	927
The Crucible Steel Company of America.....	936
The New Scullin-Gallagher Steel Castings Plant.....	936
The Lake Superior Corporation.....	937
The Strang Gas Engine. Illustrated.....	938
Developments in Utilization of Fuel Oil.....	940
The Production of Aluminum in 1904.....	941
Pacific Coast Trade Movements.....	941
The Taylor-Newbold Saw. Illustrated.....	942
The Gayley Dry Air Blast in September.....	943
National Wire Changes and Improvements.....	943
Mining Equipment Greatly Improved.....	944
Prospects for Revenue Legislation.....	945
A New Barnes Sliding Head Gang Drill. Illustrated.....	945
The New Peck Automatic Drop Lifter. Illustrated.....	946
The Philadelphia Foundrymen's Association.....	946
A Bliss Special Double Crank Press. Illustrated.....	947
The Turner Carburettor. Illustrated.....	948
The Powell White Star Valves. Illustrated.....	949
Drawback Regulations for Circular Saws and Oil Drums...	949
Editorial:	
The Proposed Ohio River-Lake Erie Canal.....	950
Engineering Schools and the Unions.....	951
Copper Prices and the Brass Foundries.....	951
The Utilization of Waste Products.....	951
Tin Plates to Be Made in Canada.....	952
The Bituminous Coal Market.....	953
The Automobile Dust Nuisance.....	954
The American Shipbuilding Company.....	954
Personal .....	955
Obituary .....	955
Pig Iron Production Increasing.....	956
News of the Works:	
Iron and Steel.....	957
General Machinery.....	957
Power Plant Equipment.....	957
Foundries .....	958
Bridges and Buildings.....	958
Fires .....	958
Hardware .....	958
Miscellaneous .....	958
Trade Publications.....	959
The Iron and Metal Trades:	
A Comparison of Prices.....	960
Chicago .....	960
Philadelphia .....	962
Pittsburgh .....	963
Cincinnati .....	965
Cleveland .....	965
New York.....	966
Metal Market.....	967
Iron and Industrial Stocks.....	967
New York Pig Iron Warrant Market.....	967
The Machinery Trade:	
New York Machinery Market.....	968
New England Machinery Market.....	969
Chicago Machinery Market.....	969
Cincinnati Machinery Market.....	970
Philadelphia Machinery Market.....	971
Government Purchases.....	972
The Dominion Iron & Steel Company.....	973
Elasticity in Cast Iron Car Wheels.....	973
Customs Contentions.....	973
Efficiency of Large Gas Engines.....	974
New Publication.....	974
Philippine Iron Ore and Other Minerals.....	975
Labor Notes.....	975
Hardware:	
Condition of Trade.....	976
Notes on Prices.....	977
John L. Sardy and Foreign Trade.....	979
Death of Benjamin F. Atkinson. Portrait.....	979
A Hardware Merchant's Freight Account.....	980
Trade Winning Methods.....	981
Rural Delivery P. O. Order Likely to be Rescinded....	983
Retail Hardware Associations and P. O. Order About	
Rural Routes.....	983
Letters from the Trade.....	985
Foreign Markets for American Cutlery.....	986
The Credit Man and His Work.....	987
Spencer Wire Company's New Catalogue.....	987
Factory Cost and Business Methods. Illustrated....	987
Price-Lists, Circulars, &c.....	988
"Dealers" Largely Responsible for Catalogue House	
Conditions .....	989
Weed & Co.'s New Building.....	989
Collecting Overcharges in Freight.....	989
Requests for Catalogues, &c.....	990
Miscellaneous Notes:	
Shaving Specialties.....	990
Sheet Metal Stampings to Order.....	990
Vrooman Sink Strainer. Illustrated.....	990
New Stevens Cleaning Rod. Illustrated.....	990
The Warren Desk Outfits. Illustrated.....	991
Adjustable Drill Attachment. Illustrated.....	991
Improved .30-Caliber Bullet No. 308284. Illustrated..	991
Patent Quick Acting Lathe Dog. Illustrated.....	992
Challenge Internal Gear Wind Mill. Illustrated.....	992
Plymouth Rock Combination Outfit. Illustrated.....	992
Marble's Automatic Flexible Joint Rear Sight. Illus..	993
Current Hardware Prices.....	994

## RURAL DELIVERY P. O. ORDER LIKELY TO BE RESCINDED.

FROM OUR WASHINGTON CORRESPONDENT.

WASHINGTON, D. C., October 10, 1905.

**P**OSTMASTER-GENERAL CORTELYOU probably before the end of this week will take up for final decision the interesting question as to whether Fourth Assistant Postmaster-General De Graw's recent order regarding the delivery of mail on rural routes by box number only shall stand or be rescinded. Indications point to the withdrawal of all those features of the new regulation except that requiring rural boxes to be numbered. There is no objection on any score to such numbering, which would be a matter of great convenience not only to the residents of routes but to the local retail merchants, who frequently have a number of customers of the same name on a single route. Letters and parcels addressed by both name and box number would rarely go astray even when deliveries were made by inexperienced substitutes, and thus an important reform in the present system would be effected without injury to any interest.

When the Postmaster-General reached Washington no less than 500 protests by mail and telegraph had been filed in the Rural Free Delivery Division. More than a score of States were represented in these communications, which were couched in decidedly vigorous English. The writers include prosperous general merchants in cities, towns and villages, but the Hardware trade has contributed a larger proportion of the memorials thus far received than any other and the State and National organizations of that trade, including manufacturers, jobbers and retailers, have taken the matter up with characteristic energy.

### Special Agents' Reports.

The special agents who were last week instructed to interview retail merchants in all parts of the country to secure their opinions with regard to the probable effect of the original De Graw order have begun to forward their reports to the Department. Twenty of these agents are in the field and the majority have now been heard from. The Department will not make these reports public at this time or until they have all been received and considered by the Postmaster-General, but it can be stated on good authority that those which thus far have been transmitted bear out fully the views expressed by retail merchants who have forwarded their individual protests to the Department. It cannot be doubted that these reports will form in the aggregate a mass of testimony showing so clearly the injurious character of the original De Graw order as to leave no doubt in the Postmaster-General's mind as to the course he should pursue.

### Big Postal Deficit Causes Uneasiness.

There is only one point regarding this question that appears to cause the postal officials any anxiety. The big deficit in the postal revenues, which last year exceeded \$15,000,000, is giving the Postmaster-General and his aids considerable uneasiness, and, as heretofore indicated in this correspondence, one of the principal reasons that moved Mr. De Graw to issue the original order was his desire to add to the receipts of the rural routes. It is, however, an open question whether a regulation such as that projected would produce any very large amount of additional net revenue. It has been suggested to Mr. De Graw that if the Department provides a channel through which the farming community can easily be reached by patent medicine fakirs, get-rich-quick schemers, racing touts, &c., the additional receipts of the routes will have to be expended in maintaining the Fraud Order Division of the Department, which is presided over by the Assistant Attorney-General. No business man of experience can entertain a doubt as to the character of a large proportion of the mail matter that would reach the farmers if addressed by box number only, and it is a question whether the retail merchants or the farmers themselves would be the chief sufferers from such a regulation.

### Mr. De Graw Has No Designs on Retail Merchants.

Mr. De Graw is taking a deep interest in the investigation now on foot and talks very frankly on the subject. To the correspondent of *The Iron Age* he said:

I would be the last man in the world to make an innovation that would do the retail merchants of the country any harm, and if the reports of our special agents show that public sentiment is correctly reflected in the communications that have been received I shall be entirely willing to have the order rescinded. Of course the matter will have to be finally determined by the Postmaster-General, but although I cannot speak for him I think he feels much as I do about it and that if the retail merchants of the country as a class believe they would be injured by the regulation it will not be enforced.

I am very glad to know that the proposition to number rural boxes is not of itself obnoxious to any interest. That was a reform which I felt should be made, and I am free to say that the other features of the regulation involving the delivery of mail by box number only and the authorization to postmasters to supply applicants with the number of routes and boxes thereon radiating from their offices were second thoughts, although I then believed them to be very desirable.

### Protestants Should Differentiate the Good from the Bad.

In this connection the fact should be remembered by all who are interested in this subject that the mere numbering of letter boxes on rural routes is not a menace, but rather an aid to the local retailer. Among the hundreds of protests thus far received there have been a few directed against this feature only of the proposed regulation. Doubtless this is merely an inadvertence on the part of the writers, who have not undertaken to quote the order or to describe it in detail in their communications; nevertheless such protests, being carelessly drawn, are ineffective and give the Department officials the impression that the writers have no real interest in a matter concerning which they seem to have little or no information. This point should be borne in mind, especially by those merchants who may be interviewed by the special agents of the Department. It is poor policy to oppose such reforms in the service as work no injury to any interest, and care should be taken to differentiate the good from the bad features of this very comprehensive regulation.

W. L. C.

## RETAIL HARDWARE ASSOCIATIONS AND P. O. ORDER ABOUT RURAL ROUTES.

**W**E have received a number of letters from officials of State retail Hardware associations relating to the ruling of the Post Office Department and the delivery of mail to rural route boxes by number simply without the names of those to whom the mail is to be delivered. This matter, it will be remembered, was brought to the attention of the trade in *The Iron Age* September 21. From these letters it will be seen how promptly and zealously the officials of the Hardware associations took the matter up, with the fortunate result of having, as we have already announced, the obnoxious order suspended. Some of these letters are suggestive as indicating the way in which the matter is regarded and the manner in which an emphatic suggestion of the views of the trade was obtained through these officials. Regarded in this light the following extracts will be of interest:

### South Carolina.

This association stands against any postal regulation giving unfair advantage to the catalogue houses over the retail interests of the country, and as the numbering and furnishing lists of the patrons of rural boxes is a step in that direction we shall enter our protest against same. We will not stand by and allow the "Government pap" to go to the big dogs while we pay the taxes that make the luxury of free delivery possible to the farmers. No, the catalogue house must not have any unfair advantage of the retail interests, robbing a great number of legitimate business interests to fatten a few already overfed corporations. When this is brought fairly before our officials at Washington I feel assured they will give it the right solution.

### Minnesota.

We believe you are entirely right in the position taken and will receive the support at least of all the Western retail Hardware associations. Protests and petitions are



in order, and same will now be hastened toward Washington. The North Dakota and Minnesota Retail Hardware associations have already wired the Postmaster-General, and we will do all we can to bring about the recall of the order.

#### Ohio.

I regard the new order of the Post Office Department as exclusively in favor of the catalogue houses. I believe that Postmaster-General Cortelyou will revise this order when the matter is properly placed before him. When he is shown what injustice this order works on the retail merchant he will be very glad to do away with the numbering scheme. I have wired entering the protest of the retail Hardware merchants of Ohio. I am also asking a number of my friends in various cities of the State to enter the protest of the mercantile associations of their cities.

#### Pennsylvania.

I heartily indorse the sentiments expressed in *The Iron Age* in its issue of September 21. I have written to the Postmaster-General in the name of our association protesting against the placing in force of this proposed innovation.

#### Indiana.

It seems to me that if our Fourth Assistant Postmaster-General could see his wife, son or daughter (if he be fortunate to have one or all) wearing the shoes, hats, &c., fitted by mail through some catalogue house, the progress of whose business he proposes to indorse and assist by this ruling, he would give ear to the request made by merchants' organizations as well as individuals, and would protest against any and all schemes for the betterment of mail order houses at the expense of every legitimate merchant in the United States.

This kind of legislation and ruling with the rural free delivery will soon find the country town and post office a thing of the past, and the farmer will realize only too late that he has been used by mail order houses for their personal gain and at his expense.

You certainly have my hearty approval in all you say and hope it may have weight with the higher officials in charge of postal laws and regulations.

#### Nebraska.

I was so impressed with the injury this ruling (as per *The Iron Age*, September 21) would work to the Hardware dealer, especially in this State, that I immediately got up a circular letter to send to each of our members. I trust that our members will vigorously protest by a strong letter to the Postmaster-General.

#### Iowa.

We trust that through the good efforts of *The Iron Age* and the officers of Hardware associations we shall be able to succeed in suspending this order until we have a chance at least to be heard from on our side of the question. We shall write the members of our Board of Directors asking them to write to Postmaster-General Cortelyou and also to take the matter up with their Congressmen and United States Senators in order that pressure may be brought to bear upon the Department to annul this order.

#### Michigan.

I have read with much interest the article in regard to the ruling of the Post Office Department in your issue of September 21. The sentiments expressed therein meet with my approval, and cannot help receiving the indorsement of all the retail dealers in the country.

This ruling would seriously affect trade conditions in the rural districts and tend largely to concentrate trade with the catalogue houses and department stores in the large cities. We appreciate your timely effort in the matter, and hope that the Department may be induced to withdraw its ruling.

#### New York.

The position of *The Iron Age* is quite right regarding the recent Post Office order. I will send a circular to each member of the State Association urging him to arouse the merchants of his town and to file his personal protest with the Postmaster-General.

#### California.

Your position in regard to the ruling is perfectly right. The writer will see that a vigorous letter is sent

in the name of our association and will try to get the members to write the Postmaster-General.

#### Colorado.

I think you are right, and that it is to the interest of every Hardware merchant in the country to see that this order is revoked at once. This is one of the things the department stores as well as the catalogue houses have been trying to get the Post Office Department to enforce, and I shall at once suggest to our association that we enter our protest to the Postmaster-General. With the co-operation of other Hardware associations and the aid of *The Iron Age* this order will, I think, be rescinded.

#### Arkansas.

We regard this order as far-reaching in effect, eliminating about the only barriers left to complicate the distribution of catalogue house literature.

I think your article in *The Iron Age* clearly sets forth the danger and every merchant, no matter what line he is engaged in, should voice his protest in some manner. My view of the whole parcels post matter is that the shortest route to relief would be to formulate some plan to bring about a general agitation in favor of 1-cent postage for sealed letters. This is a matter that should appeal to every large manufacturer and jobber, as well as merchants and professional men, and in view of the fact that the principal revenue is derived from mail of this character, and merchandise and such matter is responsible for the deficit in the postal department, there could be no plausible argument produced against it.

I appreciate the stand taken by *The Iron Age* in this very important matter.

#### Washington.

Most emphatically the new order of the Post Office Department is in the interest of the catalogue houses and a serious menace to the trade throughout the country. I will get busy at once in making protest on behalf of our association.

#### Kentucky.

I indorse most heartily what you say in your editorial. Your suggestion that the trade send protests and petitions to the Postmaster-General is very timely and wise, and I sincerely hope will meet with ready response.

#### Missouri.

The different organizations I belong to will take prompt action toward having this order annulled. I believe we should get penny postage for first-class matter, doing justice to proper interests, and then the Government will not try experiments.

#### New England.

I certainly believe the new order of the Post Office Department is greatly in the interest of the catalogue houses and menacing to legitimate trade interests.

Lockwood & Palmer, Hardware merchants, Stamford, Conn., have recently taken possession of a new store designed especially for their business. Having tested its facilities and appointments, they are more than pleased with the new establishment. The building is 64 x 85 feet, three stories, the firm occupying all of it.

W. J. Patterson has purchased the store of A. A. Antles & Co., Pilger, Neb., and will carry a retail stock of Shelf and Heavy Hardware, Stoves and Tinware, Paints, Oils, Pumps and Wind Mills, Harness, &c. The store is a new two-story brick building.

C. C. Smeby, A. Krohn and Joseph Bell have purchased the retail Hardware business of Evenson Bros., St. Peter, Minn., and will continue it under the firm name of Smeby, Krohn & Bell. The lines handled include Shelf Hardware, Stoves and Tinware, Sporting and Athletic Goods and Buggies.

The Hope Hardware Company, Hope, Ind., has been incorporated with \$10,000 capital stock. The directors are George C. Miller, R. H. Martin and I. W. Garvin.

## Letters from the Trade.

*Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.*

### A Reminder for Buyers of Hardware.

*From a Prominent Jobbing House:* Improved methods and helps in conducting business are steadily sought by live and energetic dealers who appreciate all practical aids which lessen work and bring results.

One important need has not yet been covered, but when accomplished a big step in advance will have been made, but this will most likely require the combined help of many thinkers to perfect it. The need referred to is a table showing the exact period when special goods in the Hardware line are required for stock to meet season demands. We all know that Skates sell in winter and Hammocks in summer, and a few know that the best day of the year for the sale of Ice Cream Freezers is the day before the Fourth of July. Carving Knives and Table Cutlery sell best the day before Thanksgiving and the day before Christmas, and throughout the year there are several days or weeks or months noted for the sale of some certain articles. To complete a table or calendar giving at a glance this information would enable the dealer to prepare for coming wants the same as he prepares in advance to meet the maturing "bills payable," and such a table would be a boon to many, especially one just starting in business.

Hence we present the subject and think possibly by a combination of information some readers might furnish a valuable table would result.

### Hardware Merchants Handicapped by Lack of Capital.

*To the Editor:* The weakness of the average Hardware store, or Hardware dealer, rather, to-day is lack of capital. The average intelligence, industry, honesty and other qualifications that bring success is as high, perhaps higher than in any other retail line, but the evolution in the business world during the past few years has created conditions which demand a great deal more money in every line of business than was previously necessary. Railways, banks and jobbing houses have either merged or increased their capital. Small factories that found \$15,000 or \$20,000 ample for their requirements 20 years ago to-day need \$100,000 or more to do business on.

#### EVEN MONEY ITSELF DOES NOT BEGIN TO EARN

what it did a few years back, and the man who would retire and live on "interest" to-day finds that he needs nearly twice the capital to bring the same income his father might have had when he retired. There was a time not very far in the past when in almost every small town the "head clerk" in the leading Hardware store, when he had accumulated \$1500 or \$2000, found some other young man of equal capital and formed a partnership. They started another Hardware store in the same town, paid rent for their store, got married, paid rent for two homes, paid life insurance, took a little trip once in a while, raised families and altogether became quite successful.

To-day the same thing is being attempted, but somehow it does not seem to bring results, and by common consent among the dealers its failure seems to be generally ascribed to the catalogue house.

#### THE CATALOGUE HOUSE

is hardly responsible for the increased capital necessary for banks or manufacturing plants. Neither is it to blame for the drop in interest. The catalogue house may not be a pleasant kind of competition, but what kind of competition is pleasing?

Hardware conventions, organizations and closer understandings are all right and proper. The trade is the

better because of them, but when all is done they do not make up for lack of capital.

Glance at the catalogues of the big jobbing houses and note the lines that were not carried ten years ago. One large jobber has just added Wall Paper, which is certainly a proper line. It goes more naturally with Paints and Wall Finishes than with books and magazines.

The writer has been in Hardware stores in nearly every State and Territory, not as a traveling man, but as a Hardwareman who occasionally travels and who enjoys looking at the ways of his kind in other places.

#### "COMPLETE" HARDWARE STORES.

We hear a great deal about adding some other "line" than Hardware to increase the business, but I don't believe that any one has ever seen a complete Hardware store anywhere. I certainly never saw one that could not increase its trade by adding other kinds of Hardware instead of outside lines. This statement applies only to settled and well to do communities.

Where one carries a wide assortment of Hardware carefully selected he has the opportunity to use the same kind of goods for leaders that the racket stores, fair stores, &c., use, and by buying many articles in proper quantities from the proper sources one is able to meet catalogue house prices with satisfactory margins.

I incautiously stated once at a Hardware convention that catalogue houses did not bother me to a noticeable extent, and thereby raised considerable comment, not all of it complimentary to my powers of observation. I did not state the reasons for my freedom from that kind of competition in consideration for the feelings of the other members, many of whom are trying to accomplish the impossible with a capital of \$3000 to \$5000, and I do not wish to place myself in the position of either hurting good men's feelings or being dubbed a Pharisee.

Your own observations must bear out my conclusions that there are too many small retailers and that too much is expected of small capital for conditions as they exist to-day.

NORTHWEST.

### Unreasonable Profits.

*To the Editor:* The question of unreasonable profits was touched upon by one of your correspondents in a recent issue. It seems to me that this question is one which merits the serious thought of many Hardwaremen. Unreasonable profits, in this day of aggressive competition, will ultimately do as much injury to a business as will the other extreme—viz., no profit at all. Unreasonable profits sought for by local merchants have done as much as any other one thing to build the great mail order enterprises which the local merchants now decry so loudly. Your correspondent cites instances where goods were marked at 150 per cent. profit. It would be very nice if business could be carried on and kept growing on that basis, but in this day it cannot.

Lighter stocks and quicker turns will in a great measure overcome the smaller percentage of profits, and help to show an increase at the end of the season. Transportation facilities are so much better than they were ten and twenty years ago that it is not necessary to carry such enormous stocks, and the same gross amount of business can be done with less investment than was possible in those days. With the improved facilities for quicker deliveries and quick turns for capital invested, it is not only unfair to the public but unwise for the merchant to charge unreasonable profits.

ENTERPRISE.

### Existing Conditions Require Smaller Margins of Profit.

*From a Gentleman in Close Contact with Hardware Interests:* The two-page article in issue of September 21 by "The Man Behind the Gun," entitled "A Traveling Salesman on the Catalogue House Question," impressed me with its pertinence, especially those portions dealing with articles for which several hundred per cent. profit is asked, when competitors, no matter by what



name called, are content to sell more in volume on smaller margins, in harmony with existing conditions.

#### A \$2 INVESTMENT.

For example, take the well-known retailers' assortment of Spooled Wires suitable for Hardware retailing—in all, 147 spools in a compartment box which any dealer can buy for about \$2, but which retails at 5, 10 and 15 cents per spool, according to size and kind, aggregating \$11.10. A merchant may ask any profit he chooses on his merchandise, but if some competitor, recognizing the drift of trade practice, is content with less than approximately 500 per cent. on his cost, it is farcical to implore legislative and other checks on such enterprise.

#### THOSE GOOD OLD DAYS HAVE PASSED.

Better recognize the inevitable and meet any legitimate competition with a good article at fair profit. A plumber to whom I had given several commissions exacted 15 cents once for a rubber washer that didn't cost over 1 or 2 cents, but he didn't get any more plumbing jobs from me. The old method of pricing for retail standard Hardware articles according to list, from which the merchant gets from 50 to 80 per cent. discount, is winning trade for the newcomer who has more sense. The live, modern Hardwaremen are not whimpering because the world has not stood still, but are keeping up with the leaders and making money, too. GUNNER.

### FOREIGN MARKETS FOR AMERICAN CUTLERY.

BY D. M.

**D**URING the 12 years ended June 30, 1905, we sold and exported to foreign countries Table and Pocket Cutlery, including Butchers' and Cooks' Knives, Razors and Scissors of American manufacture to the value of over \$3,000,000. In face of the fact that not many years ago we imported, chiefly from Great Britain, all of the various classes of Cutlery mentioned which were used in this country, not a single blade being at that time manufactured in the United States, this result is very remarkable. But there is a good deal more to be said on this subject, and we hope to be able to make it clear that, well as we have done in the manufacture of American Cutlery, we might have done, and may yet do, much better.

#### Exportations.

Following are the annual exportations of American Cutlery during the 12 years ended June 30, 1905, values in the United States:

1894.....	\$167,732	1900.....	\$296,795
1895.....	154,410	1901.....	234,287
1896.....	188,466	1902.....	258,028
1897.....	178,381	1903.....	323,510
1898.....	156,528	1904.....	447,638
1899.....	196,040	1905.....	437,388

According to this table, the value of the exportations, commencing with \$167,732 in 1894, has gradually increased to nearly \$500,000 a year at the present time. So far as it goes this is very gratifying, but there is another side to the account. During the same period our importations of Cutlery, instead of diminishing, have increased from \$805,799 in 1894 to \$1,800,704 in 1905. But before showing this in detail we desire to call attention to the geographical distribution of our exports of domestic Cutlery. Canada annually takes \$65,000; Brazil, \$62,000; the United Kingdom, \$31,000; Chile, \$28,000; Cuba, \$25,000; Mexico, \$19,000, and Germany, \$14,000 worth, the remaining countries taking less than \$10,000 each. There is nothing hazarded in saying that with quicker and more regular steam communication with Brazil and the other South American countries these figures would be multiplied many times. Some of the European and Asiatic States—Turkey, for example—do not purchase a blade from us. This is not for lack of appreciation or on account of price, but from the slowness and irregularity of communication, the absence of American traveling men in those countries and the unwillingness of American houses to grant credits to distant deal-

ers, when such credits can be safely granted and, if need be, easily insured.

#### Importations.

Turning now to our importations the following table of importations of foreign Cutlery into the United States during the 12 years ended June 30, 1905, values at place of exportation, must furnish us food for considerable reflection:

1894.....	\$805,799	1900.....	\$1,534,382
1895.....	1,854,803	1901.....	1,596,668
1896.....	2,155,238	1902.....	1,706,454
1897.....	2,339,963	1903.....	1,782,970
1898.....	944,056	1904.....	1,896,213
1899.....	1,188,916	1905.....	1,800,704

The variations shown in the table, for example, \$2,339,963 in 1897, dropping to \$944,056 in 1898 and rising to \$1,188,916 in 1899, are due not to any alteration in the demand, but to tariff legislation. When a raise in the duty is impending importers lay in large stocks before the expected legislation has time to be enacted, and *vice versa*, small stocks when a lowering is expected or during the year after the raise has gone into effect. The substantial fact is that while our exportations of domestic Cutlery have gradually crawled up to not quite \$500,000 a year we have been steadily importing an annual average of \$1,633,847 worth of foreign Cutlery. To put it another way, while during the 12 years under review we have exported \$3,000,000 worth of American Cutlery we have imported \$20,000,000 worth of foreign Cutlery. If we take the value of the latter after it has paid duties and has entered the markets of this country it will amount to about \$36,000,000, or twelve times the value of the domestic Cutlery exported.

#### Meeting Competition.

From these circumstances we are warranted in concluding that there is a low cost in the manufacture of certain classes of foreign Cutlery which has not been attained by our domestic Cutlers. The details of the imports show this to be especially the case as regards Pocket Cutlery, Scissors and Razors; American Table Cutlery and Cooks' and Butchers' Knives being tolerably safe from competition, both on account of their superior quality and finish, their styles and comparatively low price. This competition comes chiefly from Germany. Twelve years ago the imports of British Cutlery of all classes into the United States scarcely exceeded \$250,000 a year, and they have not yet reached \$500,000, while the imports of German Cutlery, which 12 years ago were under \$500,000, have since grown to nearly \$1,500,000. A good four-bladed Pocket Knife, horn handle, brass shield and three brass rivets, is sold in Solingen for about ½ mark, and after paying freight, duties, profits and commissions can be and is retailed in the United States for 25 cents. How to meet this competition is a serious problem for the American manufacturer.

**THE IRONTON DISC PLOW COMPANY**, Ironton, Ohio, was reorganized in August last by electing new officers and directors throughout, as follows: Colonel H. A. Marting, president; H. L. Anderson, vice-president; Otto Lintner, secretary, and T. F. Walker, general manager. The company is now making a line of steel blades for the South, and a special subsoil Plow, including fenders, in addition to the Disc Plows formerly manufactured.

**THE LALANCE & GROSJEAN MFG. COMPANY**, 19 Cliff street, New York, has been compelled by the magnitude of its business to enlarge greatly its producing capacity, the increase of which, just completed, amounts to about 40 per cent. in connection with the new "El-an-Ge" Single Coated Enamelled Ware. By means of the greater facilities now available the company hopes to keep customers more promptly supplied than heretofore.

**FROTHINGHAM & WORKMAN, LIMITED**, Montreal, Canada, are at present engaged in the compilation of a new general Hardware catalogue, which they expect to have ready for distribution by next January. The catalogue will be of a loose leaf character.



## THE CREDIT MAN AND HIS WORK.

**"THE CREDIT MAN AND HIS WORK,"** a book compiled by E. St. Elmo Lewis, is published by the Bookkeeper Publishing Company, Detroit, Mich. It contains besides a very comprehensive editorial treatment of the subject a number of papers by other authors on topics and problems connected with the theory and practice of conducting a credit department. After defining credit and briefly tracing its history the editor proceeds to show its application to different forms of business, outlining the principles of aggressive enterprise on which it rests and from which adequate credit data may be gained, with due regard to moral risks as governed by personal character. Subjects topically treated include "Credit Indemnity Insurance," "The Credit Statement" (with illustrations), "The Credit Man as Auditor," "Imperfect Accounting Systems Among Retailers," "The Salesman and the Credit Man," "The Slow Pay Customer."

## FACTORY COST AND BUSINESS METHODS.

## MODERN COMMERCIAL AND INDUSTRIAL ACCOUNTING PRACTICE.

BY HERBERT FOSTER, NEW HAVEN, CONN.

*In the third article of this series, which was published last week, the manner of verifying the accuracy of the method of finding cost was illustrated and described.*

#### Fourth Article.

### Cost of Productive Labor.

Reference has frequently been made to productive labor. To arrive at the cost of productive labor the daily

LABOR CARD		DATE			
NO. <u>725</u>	<u>July 10 1906</u>				
NAME <u>John Smith</u>					
<u>8</u>	<u>9</u>				
<u>10</u>	<u>11</u>	<u>12</u>			
<u>4</u>	<u>5</u>	<u>6</u>			
ORDER NO.	QUANTITY	OPERATION	STATE ARTICLE WORKED UPON	TIME	AMOUNT
<u>510</u>	<u>500</u>	<u>Cashings</u>	<u>Brass Discs</u>	<u>5-</u>	<u>125</u>
		<u>Repairing</u>	<u>Lathe</u>	<u>1/2</u>	<u>13</u>
		<u>Cleaning up</u>	<u>room</u>	<u>2 1/2</u>	<u>119</u>
					<u>200</u>

Fig. 7.—Daily Time Card, Illustrating (1) Productive Labor; (2) Labor for Repairs; (3) Labor—Nonproductive.

tomers," "Credit Statements in Law," "Credit Organizations and Information Systems," &c. The book certainly contains the results of wide information and large experience in mercantile matters. It will be read with interest by the student and should afford valuable information and suggestive ideas for the average business man.

## SPENCER WIRE COMPANY'S NEW CATALOGUE.

**T**HE SPENCER WIRE COMPANY, Worcester, Mass., manufacturer of iron, Bessemer and high carbon Steel Wire and Wire Specialties, is distributing a handsome new catalogue among the trade. The book contains views of the company's mills in Worcester and Spencer and an account of the history and present scope of the business. There are also tables of Wire Gauges compared, sizes, weights and lengths and tensile strength with average breaking strain for different grades. Wire of various kinds is described and listed, with a careful definition of all terms used; also Wire Fence, Tree Guards, Springs, Bathroom Fixtures and other specialties.

F. D. KEES, Beatrice, Neb., has disposed of the Hardware, Tin and Furnace business which he has conducted for the past 25 years to P. P. Pearson. This step has been necessary, in view of the steady growth of Mr. Kees' manufacturing business, which now requires his exclusive attention.

James Webb has purchased an interest in the retail business of W. A. Sprouse, at Zaleski, Ohio, and the firm will be known as W. A. Sprouse & Co. The goods handled include Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Paints and Oils, Sporting Goods, furniture, carpets, rugs, &c. The firm will build an addition to its store in the spring and will carry a larger stock.

# Order to Machinist. No 2240

For \_\_\_\_\_ Room in July 10 1901  
Machine Shop Dep't \_\_\_\_\_

Repair Lathe #517 at once

J.E.S.

NAME	Size			
<u>T. Brown</u>	<u>10</u>	<u>375</u>	<u>✓</u>	<u>Lbs. Tool Steel</u>
<u>J. Smith</u>	<u>10</u>	<u>60</u>		<u>" Tool Steel—old</u>
<u>J. Hudson</u>	<u>8</u>	<u>740</u>		<u>" Tool Steel Forgings</u>
				<u>" Crescent Steel</u>
				<u>" Norway Iron</u>
				<u>" Cast Iron</u>
				<u>" Cast Brass</u>
			<u>5</u>	<u>" Machine Steel</u>

Total Labor 645

Total Material 260

Order Completed July 10 1901

Total Cost \$ 9.05

Fig. 8.—Completed Machinists' Cost Sheet. Original is Handed to Workman, Duplicate Retained in Office. When Job is Finished Original is Turned in to Office, Where It is Figured Out as Above.

time card is the only correct medium. There are many kinds of daily time cards, designed for various purposes. Experience has shown that on some classes of work it is

next to impossible to have a separate card for each separate job a man works on. In this event one like that illustrated in Fig. 7 is very convenient.

According to this card man No. 725, John Smith, starts work at 7 a.m. and crosses figure 7. He works on this first job, "polishing brass disks," until 12 m. He crosses figure 12 to signify stopping for the noon hour. At 1 o'clock he starts work which consists of "repairing lathe"; he crosses figure 1 and again crosses at 1.30,

MILLERS FALLS COMPANY, Millers Falls, Mass., and 28 Warren street, New York: Tool catalogue C, pocket edition. Several lines are illustrated and described which have not appeared in earlier issues.

INTERNATIONAL FENCE & FIREPROOFING COMPANY, Columbus, Ohio: Catalogue No. 16, referring to Jones' Fences and Gates and Wire Fence builders' supplies.

TROW & HOLDEN, Barre, Vt.: Catalogue listing and handsomely illustrating a complete line of Granite Cut-

Machinists' Dep't.			
Name <u>John Doe</u>		Date <u>July 10.</u> 190	
Order No. <u>2840</u>		For <u>Polishing</u> Department	
New	Repairs	Article <u>Lathe #517</u>	
8 Hours			
Lbs. Iron Castings		1/5 Lbs. Jessop's Steel 2x1	
" Brass "		" Crescent Steel, X	
" Babbitt Metal		" " Die Blocks	
5 " Machine Steel		" Drill Rod No.	
" Iron			
Steel Screws			
Iron "			

Fig. 9.—Labor and Material Card for Machinists; a Separate Card Used for Each Different Job.

showing that he has finished that job and starts another, "cleaning up room," at which he works until 6 p.m. This ticket when figured out shows classification as follows:

First item.—Productive labor.....\$1.25  
 Second item.—Labor for repairs and improvements.. .13  
 Third item.—Nonproductive labor..... 1.12  
 thus showing how the three classes of labor which enter into the department ledger account are accurately obtained.

#### Machine Shop System.

It may be of interest to illustrate here a very practical system for a machine shop, which department nearly every manufacturer of any size is obliged to operate in connection with his factory.

Fig. 8 represents original order No. 2240 (duplicate of which is kept by foreman), which is issued to the machinist who is to perform the work. He and any others who may work on this same job turn in daily time cards like Fig. 9.

When the job is completed the man hands in the original order (Fig. 8), which act signifies the job is finished; the clerk then proceeds to figure out the cost and charges to the department for which the work was done, crediting the machinists' department. Should the job, instead of repairs, consist of addition to plant, the order would be made out on a form the numbers on which have a prefix, as B218. This prefix signifies "new work." The clerk in that case would make out the charge to tools, machinery or whatever the addition might be. The work of the carpenters, electricians and plumbers may be kept track of in a similar manner.

(To be continued.)

#### PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our catalogue department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made besides the brief reference to the catalogue or price-list in this column.

CHARLES AMOS & Co., Detroit, Mich.; General Catalogue No. 50A, referring to decorative Bronze, Brass, Iron and Wire Work for ornamenting and inclosing buildings and grounds and furnishing offices, counting rooms, &c.

ters' Tools, including the Barre Pneumatic Tool for carving and lettering.

BARRETT MFG. COMPANY, 17 Battery place, New York: Autumn number of house organ "Barrett's Review," referring to Roofing Material, Building Paper and Coal Tar Products.

H. M. MYERS COMPANY, Beaver Falls, Pa., Ames Shovel & Tool Company, owner: Catalogue No. 21, illustrating and describing line of Shovels, Spades, Scoops and Drain Tools; also pamphlet showing fac-simile labels.

D. F. JONES MFG. COMPANY, Ltd., Gananoque, Ont.: Illustrated price-list catalogue of Shovels, Spades, Scoops, Drainage Tools, &c.

BISSELL CARPET SWEEPER COMPANY, Grand Rapids, Mich., and 25 Warren street, New York: Catalogue of Carpet Sweepers.

BLISH, MIZE & SILLIMAN HARDWARE COMPANY, Atchison, Kan.; 1905-1906 Catalogue of Guns, Ammunition, Sportsmen's Sundries, Silver Plated Ware, &c.

J. WISS & SONS COMPANY, Newark, N. J.; "Pointed Sharpness," a handsome illustrated booklet with embossed cover, relating the complete process of making good Shears and listing several styles made by the company.

DEERE & Co., Moline, Ill.: Large and handsomely illustrated catalogue of Plows, including Disk Plows, Harrows, Cultivators, &c., with telegraphic code.

GOODWIN & KINTZ COMPANY, Winsted, Conn.: Catalogue No. 26 showing and listing an extensive line of Gas and Electric Portables, Electroliners and Newels.

The Ed. S. Hughes Company, Abilene, Texas, has been incorporated with a capital of \$200,000. The company succeeds Ed. S. Hughes & Co., whose business was established in 1882. The lines of goods carried include Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Firearms and Ammunition, Buggies and Wagons.

G. A. Gridley & Son, wholesale and retail Hardware, Elmira, N. Y., who recently purchased the Hardware stock of Griswold, Malony & Co., have moved back into their old quarters at 126-128 West Water street, which have been rebuilt since the fire of last spring.

Fire recently destroyed the retail Hardware and furniture store of Fry Bros., Huntingdon, Tenn. They do not intend resuming business.

## "DEALERS" LARGELY RESPONSIBLE FOR CATALOGUE HOUSE CONDITIONS.

BY ED. FORD.

FOR nearly two years we have been trying to impress on the Catalogue House Committee and the retail associations through *The Iron Age* that present conditions were largely due to the indifference of the retail "dealers."

The up to date retail "merchant," as a rule, is not more annoyed by catalogue house competition than by hundreds of other troubles peculiar to his locality.

### Driving Away Trade.

We have repeatedly pointed out the antiquated, in-different methods employed by many "dealers," that actually drive away trade; also the exorbitant profits some of these "back numbers" insist on asking.

We heartily indorse the "Traveling Salesman's" comments on page 777 in *The Iron Age* of September 21 and would state that just as long as retail "dealers" insist on pricing the small items so high—i. e., selling at from three to ten times above cost, and do not get out of the "ruts,"—just so long will the catalogue house thrive.

"The world do move," and the business man must move with it or fall by the wayside. Conditions are constantly changing; business methods must be changed to suit the times. Because our grandfathers used the tallow dip as their only means of light does not signify we should not seek to improve thereon.

Many retail "dealers" are still as far behind modern merchandising as the tallow dip is behind the electric light, and it seems strange that the ones who are trying to fight the catalogue house evils never touch this point. We realize it is

### A Delicate Matter for the Jobber

to criticise his customer, the retailer, for we all are disinclined to accept criticism kindly; yet we read, "Whom the Lord loveth He chasteneth." Instead of trying to force the whole issue on the manufacturers, if all interested in this work would start an educational campaign among the retail "dealers," not the "merchants," ten times as much would be accomplished.

Let us repeat: The catalogue house will thrive just as long as present methods of merchandising are employed by retail "dealers."

We would also add that trying to keep catalogue houses out of goods is a farce, generally speaking. They have the money and can get all the goods they want; if not directly, through a second or third party.

### Manufacturers Will Assist.

We are deeply interested in the success of the retail "merchants" and "dealers" and will do all in our power to assist them in their fight against catalogue house competition, but are at a loss to understand why none of the active workers strikes at the root of the trouble. The jobbers, the retail merchants and the Catalogue House Committee are doing the "dealers" an injury by not bringing to their attention actual facts, instead of blinding them by laying all the blame on others, as they, like us all, are prone to see others' faults rather than their own shortcomings.

Let not the jobbers be oversensitive about losing trade, but state publicly what they freely do privately, and they will have the hearty support and co-operation of every up to date retail merchant and manufacturer.

The Catalogue House Committee we believe to be fair minded. They are certainly able business men—the peers of their respective lines—and before their next report we trust they will give the trailing "dealer" serious consideration.

How often we hear the retail Hardwareman complaining about the racket store, the 5 and 10 cent counter-man or the country department store, who sell principally Tinware and small items of Hardware. Their business is just as legitimate as Hardware, and if the Hardwareman cannot meet this competition it is the Hardwareman's fault entirely, largely due to his desire for old-time profits on small items.

Although catalogue house competition is different, their success in their Hardware department has been largely due to the high prices the retailer places on small items, and it is for his true friends, if they really desire to assist him, to kindly point out the error of his ways and not deceive him by placing the blame elsewhere and allow him to continue going in the wrong direction.

## WEED & CO.'S NEW BUILDING.

WEED & CO., Buffalo, N. Y., large jobbers of Hardware, have lately moved into the substantial new building erected to accommodate their wholesale department. The building stands at the corner of Swan and Center streets, has a capacity of 2,100,000 cubic feet and is five stories high. The plans, construction and equipment combine the most desirable features of the leading Hardware buildings in the United States, which were carefully studied before work was begun. A main driveway runs through the entire building, with a shipping department in the rear, where a score of wagons may be loaded at the same time. Here there are huge bins for classifying freight, which is received from the packing room above by means of a broad steel chute. This packing room is served by two 2-ton hydraulic elevators and a smaller elevator for waiting orders. On the second floor also are the sample rooms, factory, mill and railroad supply sales offices, catalogue department and general offices of the company. The third floor contains over 1½ miles of running shelving devoted to Shelf Hardware and Tools carefully classified. The usual assortment of bulky but comparatively light weight goods fills the upper floors.

Weed & Co. are recognized as one of the most progressive and enterprising mercantile houses in Buffalo, which city is rapidly growing in importance as a manufacturing and distributing center. Their retail store, entirely distinct from the wholesale department, is known as a model of its kind. With their new accommodations the carrying on of their large and growing business will be facilitated, and in their extending business they will have the best wishes of the trade. They are certainly to be congratulated on the completeness and extent of their up to date establishment.

## COLLECTING OVERCHARGES IN FREIGHT.

THE MERCHANTS' NATIONAL AUDIT COMPANY, with offices in the Monadnock block, Chicago, makes a specialty of auditing railroad freight bills (for a period as far back as six years) for clients who feel that they have been overcharged. The proposition of the company is substantially as follows:

If you pay freight the following will interest you: Send us the railroad expense bills you have paid during the past six years, even though you have checked and filed them away as being correct, and we will audit them and return to you detailed statements of such overcharges as we may find, in shape for you to present for payment, and when you receive the money you mail us your check for one-half the amount.

We possess superior facilities for doing this class of work, employing competent help and devoting our entire time and attention to this particular line of business. We have audited the bills of several hundred firms, and have yet to find a single customer for whom we have not secured substantial returns.

In accepting our proposition please consider: You have nothing to lose; you handle your own business direct with the railroads; we stand all the expense and take the chance of doing our work for naught; after we are through with your work you have the satisfaction of knowing that you are getting all that is coming to you and that your interests are being properly protected; if you are not, we enable you to secure proper adjustments, and show you where you are being discriminated against.

It will be observed that after the company has audited the bills they are returned to the client, who then takes up the matter direct with the railroads, and that no fee is exacted for the company's service unless the merchant or manufacturer succeeds in securing some concession from the carriers. The company states that it has been in active business for about a year and eight months, although it took some seven years to get together and compile the data necessary to enable it to audit back business. It now has many thousands of customers, including Hardware merchants at various points throughout the United States, and since January 1 last has averaged one new client a day.



## REQUESTS FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS** for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate.

FROM R. L. NANCE, who has bought the Hardware business of Blenkiron Brothers, at Sholes, Neb.

FROM SALISBURY HARDWARE COMPANY, Salisbury, Md., which has been incorporated with a capital of \$50,000, to conduct a wholesale and retail Hardware business.

FROM WALKER BROS., New London, Iowa, who have succeeded to the Shelf Hardware, Stove, Tinware and Sporting Goods business of E. M. Lee.

FROM BARNS-HAVLIK COMPANY, David City, Neb., which has been incorporated by Kimel Barns, J. L. Havlik and L. R. Coufal to do a general Hardware business.

FROM MORRIS HARDWARE COMPANY, Morris, Ind. Ter., L. W. & R. B. Pugh, proprietors, which succeeds Gordon & Meek in the Shelf Hardware, Stove, Wagon, Implement and furniture business.

FROM F. M. DARBY, who has succeeded the Hardware firm of Scott & Ellis, Basehor, Kan.

FROM STAATS, PAYNES & ADAMS, Clinton, Ind., who will succeed Charles Whitcomb & Co. on November 1.

FROM KEMP BROS., Mullin, Texas, who have purchased the Hardware and Saddlery business of Summy & Abscher.

FROM MCKINLEY & EDDY, Mitchell, S. D., who have purchased from A. B. McKell the balance of the Hardware stock remaining after his closing out sale.

FROM JOHN M. FITZGERALD & Co., who are opening a retail store in Taunton, Mass., to handle Builders' and General Hardware, Wooden Ware, Paints, &c.

FROM THE LAKE ERIE NAIL & SUPPLY COMPANY, Cleveland, Ohio. Previous to this year the company has been dealing in Wire Nails and kindred products, but it is now adding to its stock a line of mill and mine supplies. It will issue a new catalogue, to be out early next year, and will be pleased to receive catalogues and price-lists from manufacturers of goods in demand by the mill and mine trade.

The Planters' Hardware and Mercantile Company, Thibodaux, La., has changed its name to Planters' Hardware and Mill Supply Company, the latter being considered as more appropriately covering the character of the business done, which is not that of a general store, but

have just issued a 24-page illustrated book relating to their numerous razor and shaving specialties. It is especially full of information on this general subject, treating it specifically and at length by illustration, diagram and type matter in an instructive way, covering interestingly the various phases of sharpening, using and keeping in order shaving appurtenances. Magnified sections of strop and sharpening leathers, hair, epidermis, black heads, views of razors, cup, brush, &c., are given, thus affording valuable information to individuals who sell or use razors and the accompanying accessories.

## Sheet Metal Stampings to Order.

J. H. Sessions & Son, Bristol, Conn., for many years manufacturers of trunk hardware, light steel washers, burrs, &c., and who until recently have given their entire attention to the production of their own goods, announce that they are now prepared to supply sheet metal stampings to the general trade to order. The facilities of the factory are of the best, being equipped to finish work as required, including plating, brass, nickel and bronze, japanning and tinning. They make a specialty of brass plating.

## Vrooman Sink Strainer.

The Vrooman sink strainer, illustrated herewith, manufactured by F. H. & E. B. Vrooman, 325 Dearborn street, Chicago, is now offered to the trade coated in vitreous enamel and in three different colors—namely, turquoise exterior with white lining, stone gray with white lining and plain enamel—as well as bright and jap-

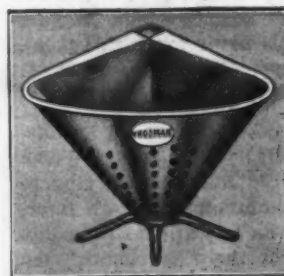


Fig. 1.—Vrooman Sink Strainer.



Fig. 2.—Wire Stand for Sink Strainer.

anned tin. The manufacturers claim the enamel is of the highest grade triple coated and the white lining is acid proof. The utility of the strainer is self-evident, keeping the grease and scraps out of the sink and permitting the water to strain off without danger of clogging the pipe or trap. The strainer can readily be attached to sinks having wooden frames, and for iron and enamel sinks a wire stand is provided, as shown in the cut Fig. 2.

## New Stevens Cleaning Rod.

J. Stevens Arms & Tool Company, Chicopee Falls, Mass., offers to the trade the new cleaning rod for rifles



New Stevens Cleaning Rod.

Hardware, Stoves, Implements, Mill Supplies, &c., wholesale and retail. The personnel of the company continues unchanged.

## MISCELLANEOUS NOTES.

### Shaving Specialties.

F. A. Reichardt & Co., 391 Broadway, New York, manufacturers of razors, razor guards and sharpeners and other related specialties, trademark "Farny," who are also importers and wholesalers of surgical instruments,

shown in the cut. It is made in two sizes, No. 510, which has 1/8-inch coppered rod, 28 inches long, and No. 512, which has 5/32-inch coppered rod, 30 inches long. The former is for .22-caliber guns and the latter for .32 and larger. These rods are made with one end flattened and slotted, the other end having a jagged tip. Special attention is called to the patent ring, which differs from the oval or pear shaped rings generally used in that it has shoulders so formed as to strike the outside edge of the barrel where no damage can be done. The manufacturer argues that a ring which strikes on the inside edge dents the muzzle and causes nicks or burrs which will deflect the bullet and make a rifle inaccurate.

### The Warren Desk Outfits.

The J. D. Warren Mfg. Company, Chicago, Ill., maker of the Warren sectional shelving, is offering a new line



Fig. 1.—Warren Desk Outfit with Paper Rack.

of outfits for the desk, as shown herewith. These are of various shapes and sizes, so as to fit almost any space,

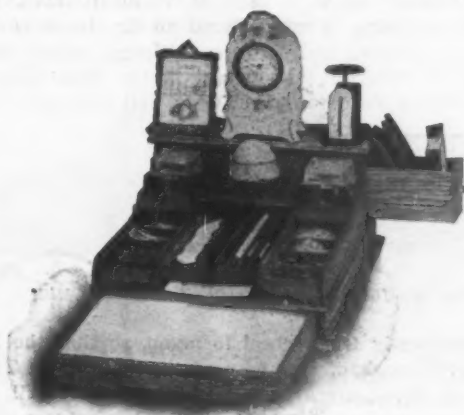


Fig. 2.—Desk Outfit with Drawers Open.

the larger ones (Figs. 1, 2 and 3) affording separate compartments for ink wells, sponge cup, pens, pencils,



Fig. 3.—Desk Outfit with Paper Holder.

erasers, postage stamps, writing paper, envelopes, blotters, business cards, letter scale, calendar, clock, paper

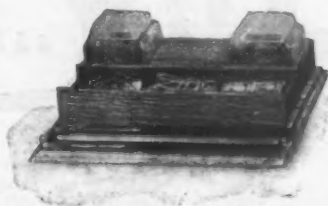


Fig. 4.—Small Desk Outfit with Two Inkstands.

clips, rubber bands, pins, matches, cigars, &c. The smaller outfits (Figs. 4 and 5) are of more limited ac-

commodations. All, however, carry out the idea of having an easily accessible place for desk essentials, with sliding glass covers keeping everything in plain sight but free from dust. The outfits are referred to as at-

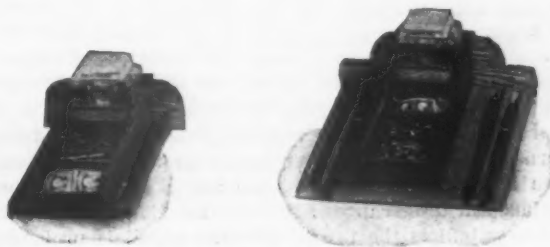
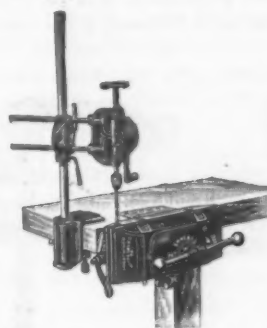


Fig. 5.—Small Desk Outfits with One Inkstand.

tractive in appearance and tending to promote neatness and convenience in office work. They are described in more detail in a booklet which the company will send on application.

### Adjustable Drill Attachment.

Emmert Mfg. Company, Waynesboro, Pa., is offering an adjustable drill attachment with bracket of improved form for holding the drill, as shown in the cut. The bracket can be attached at any point along the side or end of a bench and is adjustable in any position or



Adjustable Drill Attachment.

height. The drill can be used with any kind of vise, but is here shown in connection with one of the company's Universal vises. Twist drills from 1-16 to 3/8 inch may be used in the device, but are not supplied with the attachment.

### Improved .30-Caliber Bullet No. 308284.

The Ideal Mfg. Company, New Haven, Conn. is offering the bullet and metallic cup shown herewith. The base is smaller in diameter than the body of the bullet and is formed on a taper. This is shaped to fit snugly into the metallic cup. The cup is convex on the bottom, while on the inside of the cup are small projections or teeth.



Improved .30-Caliber Bullet No. 308284.

When the bullet is being lubricated in the Ideal lubricator the teeth are forced into the softer metal of which the bullet is composed and the cup at the same time is being forced onto the base of the bullet. It is claimed by the manufacturer that when the pressure of the gas

from the burning powder strikes the convex surface of the cup it is immediately flattened out against the flat end of the bullet and the diameter thus increased forms a positive gas check, thus preventing the hot gases reaching the softer metal. At the same time the teeth on the inside help to hold on to the rifling, preventing slipping or stripping. It is also claimed for this reloading ammunition, using the old fired shells over and over again, that the cost is .50 per cent. less than the regular ammunition and it is just as accurate and efficient for 200, 300, 500 and 600 yards, at which ranges over 75 per cent. of the ammunition is used. All the rapid fire and skirmish runs are included in these ranges. It is further claimed that with the new bullets the life of the rifle barrel is prolonged 100 per cent. Heretofore, the manufacturer explains, the greatest distance attained with any degree of accuracy with a cast bullet has been 200 yards. To increase velocity to the point desired to carry the bullet greater distances required so much more smokeless powder that the increased heat generated to produce the velocity fused or melted the base of the bullet, thus destroying all accuracy. The manufacturer is prepared to furnish single or armory molds to cast eight bullets at a time, to sell the bullets by the thousand or to furnish the metal gas check cups.

### Patent Quick Acting Lathe Dog.

The lathe dog shown in Figs. 1 and 2 is made of the best steel, so formed as to give the greatest strength. The screws are made of tool steel. When adjusting the dog the entire operation is performed by the use of the cam

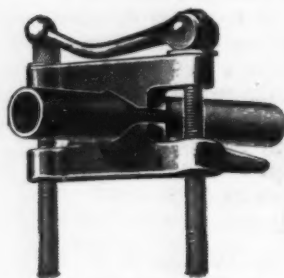


Fig. 1.—Quick Acting Lathe Dog.

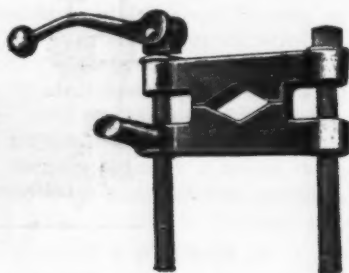


Fig. 2.—Manner of Adjusting Lathe Dog.

lever, no wrench being required. Finished work can be clamped in the dog without scarring it, obviating the use of copper or tin. The device is offered by the Emmert Mfg. Company, Waynesboro, Pa.

### Challenge Internal Gear Wind Mill.

Challenge Company, successors to Challenge Wind Mill & Feed Mill Company, Batavia, Ill., are offering



Fig. 1.—Challenge Internal Gear Wind Mill.

the wind mill shown in the accompanying illustrations, embodying new points of construction. An especial feature is the combination of working parts which compose the internal gear, rocking arms and split boxes. The internal gear, Fig. 3, has two cogs in mesh as against one

of the externals. The rocking arm is referred to as the best means of guiding the piston, there being no slides to create friction or to require oiling. A one-piece solid steel crank, which is driven without a key by the gear itself, is referred to as overcoming all possibility



Fig. 2.—Working Parts of Challenge Wind Mill.

of gears and shafts working loose. The crank has a substantial bearing at each side and the load of the pump comes between to prevent all overhanging with its consequent torsion and wear. The boxes are easily replaced, of interchangeable babbitt with graphite and are of the highest grade. The shafts lie parallel, this arrangement being adopted to distribute the wear and



Fig. 3.—Internal Gear of Challenge Wind Mill.

strain uniformly from wheel to pump, so that the load and wear throughout may be perfectly equalized. Three lengths of stroke are arranged in each size of mill, and the changes can be easily made. The manufacturer states that only the best material is used for all parts, and that they are put together to produce a strong and simple mill.

### Plymouth Rock Combination Outfit.

The combination outfit shown herewith provides tools for general boot, shoe, rubber, harness and tinware repairing, and includes a riveting machine. The lasts



Plymouth Rock Combination Outfit.

and stands are extra heavy, while the tools and materials throughout are of extra quality. The 42 articles are put up in lock cornered boxes with hinged covers, nicely varnished. This is one of the five new high grade Plymouth Rock outfits put on the market by the Root Brothers Company, Plymouth, Ohio.



**Marble's Automatic Flexible Joint Rear Sight.**

Marble Safety Axe Company, Gladstone, Mich., is offering the automatic sight illustrated herewith. In Fig. 1 is shown the exact size of the two regular disks fur-

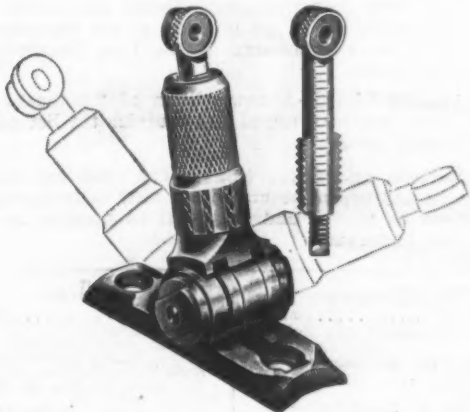


Fig. 1.—Marble's Automatic Flexible Joint Rear Sight.

nished with each sight, which is numbered to designate the particular model and caliber of rifle for which it is made. A strong coiled spring in the hinge joint automatically and instantly brings the sight in position for shooting, no matter how much it is knocked about in the brush

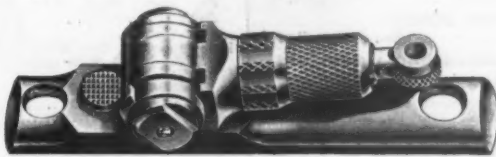


Fig. 2.—Marble's Sight Folded.

or by a firing bolt. The automatic joint permits the use of the sight on rifles with long firing bolts. When the proper elevation has been attained by turning the upper sleeve a half turn of the lower sleeve locks the upper one and prevents it being accidentally turned and the elevation being altered. When the locking sleeve is tightened it forces the top of the upper sleeve against

the shoulder on the upper end of the split stem socket. Thus, it is remarked, the socket is made to grip the stem and will hold it perfectly true and rigid, even at the highest elevation, no matter how worn the parts may become. The size of aperture is changed by changing the disks which screw into the arm. By this construction one disk can never cover up the aperture of another and thus cause the loss of a good shot. Any of the company's five disks will fit all of its sights. An adjustable blank screw in the bottom of the disk stem enables one easily to change the point blank range to shorter or even longer distance in a moment's time without the use of tools. When the sight is folded down, as in Fig. 2, and the locking button is pushed backward until it engages with the slot in the bottom of the upright, the sight will re-



Fig. 3.—Marble's Special Base for Automatic Flexible Joint Rear Sight.

main in that position until released. The wire in the especially tempered coiled spring in the joint is nine inches long, and the spring is guaranteed by the company never to weaken, no matter how long the sight may remain folded. The regular base is referred to as more or less in the way of the thumb in the rapid handling of a gun. The special base, shown in Fig. 3, is designed to leave the tang and grip entirely free from any incumbrance. The most valuable feature of a sight so located is alluded to as being that when the gun is brought to the shoulder the eye is near enough to the sight for instant aim, without throwing the head forward and thus losing a valuable moment. The special base also allows a greater distance between sights.

J. A. Beckius has purchased the business of C. J. Kuenster & Sons, Readlyn, Iowa, in Shelf and Heavy Hardware, Stoves and Tinware. A tin shop is also conducted.

**PAINTS, OILS AND COLORS**

Animal, Fish and Vegetable Oils—	
Linseed, City, raw.....	45 @ 46
Linseed, City, boiled.....	47 @ 48
Linseed, State and West'n, raw.....	46 @ 47
Linseed, raw Calcutta seed.....	46 @ 47
Lard, Extra Prime, Winter.....	60 @ 61
Lard, Extra No. 1.....	47 @ 48
Lard, No. 1.....	37 @ 38
Cotton-seed, Crude, f.o.b. mills.....	19 @ 19 1/2
Cotton-seed, Summer Yellow.....	24 @ 25
Prime.....	24 1/2 @ 25 1/2
Cotton-seed, Summer Yellow.....	24 @ 25
off grades.....	@
Sperm, Crude.....	55 @ 56
Sperm, Natural Spring.....	55 @ 56
Sperm, Bleached Spring.....	55 @ 56
Sperm, Natural Winter.....	55 @ 56
Sperm, Bleached Winter.....	55 @ 56
Tallow, Prime.....	51 @ 52
Whale, Crude.....	42 @ 43
Whale, Natural Winter.....	42 @ 43
Whale, Bleached Winter.....	44 @ 45
Menhaden, Brown, Strained.....	37 @ 38
Menhaden, Light, Strained.....	32 @ 33
Menhaden, Bleached, Winter.....	30 @ 31
Menhaden, Ex-Bld., Winter.....	31 @ 32
Menhaden, Southern.....	16 @ 17
Cocanut, Ceylon.....	7 @ 7 1/2
Cocanut, Cochiti.....	7 @ 7 1/2
Cod, Domestic, Prime.....	34 @ 35
Cod, Newfoundland.....	30 @ 31
Red, Klaine.....	35 @ 36
Red, Saponified.....	4 @ 4 1/2
Olive, Italian, bbls.....	60 @ 62
Neatsfoot, prime.....	49 @ 50
Palm, Loga.....	6 @ 6 1/2
Mineral Oils—	
Black, 29 gravity, 25 @ 30 cold test.....	10 1/2 @ 11 1/2
Black, 29 gravity, 15 cold test.....	11 1/2 @ 12 1/2
Black, Summer.....	10 1/2 @ 11 1/2
Cylinder, light filtered.....	18 @ 19
Cylinder, dark filtered.....	16 @ 17
Paraffine, 903-907 gravity.....	12 1/2 @ 13
Paraffine, 883 gravity.....	12 1/2 @ 13
Paraffine, 883 gravity.....	12 1/2 @ 13
Paraffine, Red.....	11 1/2 @ 12 1/2
In small lots 1/4¢ advance.	

Miscellaneous—	
Barytes, White, Foreign.....	ton \$17.50 @ 19.00
Barytes, Amer. floated.....	ton 18.00 @ 19.00
Barytes, Crude, No. 1.....	ton 10.00 @ 11.00
Chalk, in bulk.....	ton 3.00 @ 3.25
Chalk, in bbls.....	100 lb. @ .35
China Clay, English.....	ton 11.00 @ 17.00
Cobalt, Oxide.....	100 lb. 2.50 @ 2.60
Whiting, Common.....	100 lb. .43 @ .48
Whiting, Gliders.....	100 lb. .50 @ .55
Whiting, Ex. Gliders.....	100 lb. .50 @ .55
Putty, Commercial—	
In bladders.....	\$1.65 @ 1.85
In bbls. or tubes.....	1.20 @ 1.40
In 1 lb to 5 lb cans.....	2.60 @ 2.90
In 12 1/2 to 50 lb cans.....	1.45 @ 1.85
Spirits Turpentine—	
In Oil bbls.....	69 1/2 @ 71
In machine bbls.....	71 @ 71 1/2
Glue—	
Cabinet.....	11 @ 15
Common Bone.....	7 @ 9
Extra White.....	18 @ 24
Foot Stock, White.....	11 @ 14
Foot Stock, Brown.....	8 @ 11
German Hide.....	12 @ 18
French.....	10 @ 14
Irish.....	13 @ 15
Low Grade.....	9 @ 12
Medium White.....	14 @ 17
Gum Shellac—	
Bleached Commercial.....	37 @ 38
Bone Dried.....	47 @ 48
Button.....	45 @ 46
Diamond.....	50 @ 51
Fine Orange.....	45 @ 47
A. C. Garnet.....	44 @ 46
D. C.....	40 @ 42
Octagon B.....	52 @ 53
T. N.....	41 @ 43
V. S. O.....	38 @ 40
Colors in Oil—	
Black, Lampblack.....	12 @ 14
Blue, Chinese.....	34 @ 46
Blue, Prussian.....	32 @ 36

Blue, Ultramarine.....	13 @ 16
Brown, Vandyke.....	11 @ 14
Green, Chrome.....	10 @ 15
Green, Paris.....	24 @ 28
Sienna, Raw.....	12 @ 15
Sienna, Burnt.....	12 @ 15
Umber, Raw.....	11 @ 14
Umber, Burnt.....	11 @ 14
White Lead, Zinc, &c.—	
Lead, English white, in Oil.....	9 1/4 @ 9 1/2
Lead, American white, in Oil:	
Lots of 500 lb or over.....	@ 6 1/2
Lots less than 500 lb.....	@ 7
In Barrels.....	@ 8
Lead, White, in oil, 25 lb tin	
pails, add to keg price.....	@ 1/2
Lead, White, in oil, 12 1/2 lb tin	
pails, add to keg price.....	@ 1
Lead, White, in oil, 1 to 5 lb	
ass'ted tins, add to keg price.....	@ 1 1/2
Lead, American, Terms: For lots 12	
tons and over 1/4¢ rebate; and 2% for	
cash if paid in 15 days from date of	
invoice; for lots of 500 lbs. and over	
2% for cash if paid in 15 days from	
date of invoice, for lots of less than	
500 lb. net.....	@ 8
Lead, White, Dry in bbls.....	@ 4
Zinc, American, dry.....	14 @ 14 1/2
Zinc, French:	
Paris, Red Seal, dry.....	9 1/2
Antwerp, Red Seal, dry.....	10 1/2
Antwerp, Green Seal, dry.....	9 1/2
Green Seal:	
Lots of 1 ton and over.....	12 1/2 @ 13
Lots of less than 1 ton.....	12 1/2 @ 13 1/2
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over.....	11 1/4 @ 11 1/2
Lots of less than 1 ton.....	11 1/4 @ 12
Discounts—French—Discounts	
to buyers of 10 bbl. lots of one or mixed	
grades, 1%; 25 bbls., 2%; 50 bbls., 4%.	
Dry Colors—	
Black, Carbon.....	5 @ 6
Black, Drop, Amer.....	4 @ 6
Black, Drop, Eng.....	5 @ 15

Black, Ivory.....	16 @ 20
Lamp, Com.....	4 1/2 @ 6
Blue, Celestial.....	4 @ 6
Blue, Chinese.....	29 @ 32
Blue, Prussian.....	27 @ 30
Blue, Ultramarine.....	4 1/2 @ 15
Brown, Spanish.....	4 1/2 @ 15
Carmine, No. 40.....	\$3.50 @ 3.60
Green, Chrome, ordinary.....	3 1/2 @ 6
Green, Chrome, pure.....	17 @ 25
Lead, Red, bbls., 1/2 bbls. and kegs:	
Lots 500 lb or over.....	@ 6 1/2
Lots less than 500 lb.....	@ 7
Litharge, American, bbls.....	6 @ 6 1/2
Ocher, American.....	ton \$8.50 @ 16.00
Ocher, American Golden.....	2 1/2 @ 3 1/2
Ocher, French.....	14 @ 24
Ocher, Foreign Golden.....	3 @ 4
Orange Mineral, English.....	8 @ 10
Orange Mineral, French.....	10 1/2 @ 12 1/2
Orange, Mineral, German.....	8 1/2 @ 10 1/2
Orange Mineral, American.....	8 1/2 @ 10 1/2
Red, Indian, English.....	4 1/2 @ 8 1/2
Red, Indian, American.....	3 @ 3 1/2
Red, Turkey.....	4 @ 10
Red, Tuscan, English.....	7 @ 10
Red, Venetian, Amer.....	100 lb \$0.50 @ 1.25
Red Venetian, English.....	100 lb \$1.15 @ 1.75
Sienna, Italian, Burnt and	
Powdered.....	3 @ 3 1/2
Sienna, Ital., Raw, Powd.....	3 @ 3 1/2
Sienna, American, Raw.....	1 1/2 @ 2
Sienna, American, Burnt and	
Powdered.....	1 1/2 @ 2
Talc, French.....	ton \$15.00 @ 30.00
Talc, American.....	ton 15.00 @ 25.00
Terra Alba, French.....	100 lb 50 @ 1.00
Terra Alba, English.....	100 lb 50 @ 1.00
Terra Alba, American.....	100 lb 50 @ 1.00
No. 1.....	60 @ 70
Terra Alba, American.....	100 lb 50 @ 1.00
No. 2.....	45 @ 55
Umber, Turkey, Bnt. & Pow.....	2 1/2 @ 3 1/2
Umber, Turkey, Raw & Pow.....	2 1/2 @ 3 1/2
Umber, Burnt, Amer.....	1 1/2 @ 2
Umber, Raw, Amer.....	1 1/2 @ 2
Yellow, Chrome.....	11 @ 14
Vermilion, American Lead.....	10 @ 25
Vermilion, Quicksilver, bulk.....	2 @ 5
Vermilion, Quicksilver, bags.....	1 @ 5
Vermilion, English, Import.....	75 @ 80
Vermilion, Chinese.....	50 @ 55 @ 60

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33%, @ 33%, & 10% signifies

that the price of the goods in question ranges from 33%, per cent. discount to 33%, and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also **THE IRON AGE DIRECTORY**, issued May, 1905, which gives a classified list of the products of our advertisers and thus serves as a **DIRECTORY** of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Domestic,  $\frac{1}{2}$  doz. \$3.00.....33%  
North's.....10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent.....35%  
Taplin's Perfection.....35%

**Ammunition—See Caps, Cartridges, Shells, &c.**

## Anvils—American—

Eagle Anvils..... $\frac{1}{2}$  lb. 6%  
Hay-Budden, Wrought.....30%  
Horsehoe brand, Wrought.....30%  
Trenton..... $\frac{1}{2}$  lb. 9%  
Imported—

Peter Wright & Sons..... $\frac{1}{2}$  lb. 10%  
**Anvil, Vise and Drill—**

Millers Falls Co., \$12.00.....15%  
**Apple Parers—See Parers,**

**Apple, &c.**

## Aprons, Blacksmiths—

Livingston Nail Co.....33%

## Augers and Bits—

Com. Double Spur.....75%  
Jennings' Patn., reg. Anvil.....50%

Black Lip or Blued.....60%  
Boring Mach. Augers.....70%  
Car Bits, 12-in. twist.....50%  
Ford's Auger and Car Bits.....40%  
Forester Pat. Auger Bits.....25%  
C. E. Jennings & Co.:  
No. 10 ext. lip, R. Jennings' list.....35%  
No. 30, R. Jennings' list.....40%  
Russell Jennings.....25%  
L'Hommedieu Car Bits.....15%  
Mayhew's Countersink Bits.....45%  
Millers Falls.....50%  
Ohio Tool Co.'s Bailey Auger.....40%  
Car Bits.....10%  
Pugh's Black.....20%  
Pugh's Jennings' Pattern.....25%  
Snell's Auger Bits.....60%  
Snell's Bell Hangers' Bits.....40%  
Snell's Car Bits, 12-in. twist.....60%  
Wright's Jennings' Bits.....50%

## Bit Stock Drills—

See Drills, Twist.

## Expansive Bits—

Clark's small, 18-lb. large, \$3.....50%  
Clark's Pattern, No. 1,  $\frac{1}{2}$  doz. \$3.....50%  
No. 2, 18-lb.....65%  
Ford's, Clark's Pattern.....60%  
C. E. Jennings & Co., Steer's Pat.....25%  
Swan's.....20%

## Gimlet Bits—

Common Dble. Cut.....\$3.00@3.25  
German Pattern, Nos. 1 to 10,  
\$1.00; 11 to 13, \$1.75

## Hollow Augers—

Bonney Pat., per doz. \$5.50@6.00  
Ames.....25%  
Universal.....20%  
Wood's Universal.....25%

## Ship Augers and Bits—

C. E. Jennings & Co.:  
L'Hommedieu's.....15%  
Watrous.....35%  
Ohio Tool Co.'s.....40%  
Snell's.....45%

## Awl Hatts—See Hatts, Awl.

## Awls—

Brad Awls:  
Handled.....gro. \$2.75@3.00  
Unhanded, Shlided.....gro. \$3.00@3.25  
Unhanded, Patent.....gro. \$3.00@3.25  
Peg Awls:  
Unhanded, Patent.....gro. \$1.50@1.75  
Unhanded, Shlided.....gro. \$1.50@1.75  
Scratch Awls:  
Handled, Com.....gro. \$1.50@1.75  
Handled, Socket.....gro. \$1.50@1.75  
Hurdwood.....40%

## Awl and Tool Sets—See

Sets, Awl and Tool.

## Axes—

Single Bit, base weights:  
First Quality.....\$6.75  
Second Quality.....\$6.25  
Double Bit, base weights:  
First Quality.....\$9.00  
Second Quality.....\$8.50

## Axle Grease—

See Grease, Axle

## Axles—

Iron or Steel  
Concord, Loose Collar.....\$4.00@4.50  
Concord, Solid Collar.....\$4.00@4.50

No. 1 Common, Loose.....3%  
No. 1 1/4 Com., New Style.....4%  
No. 2 Solid Collar.....4%  
Half Patent:

Nos. 7, 8, 11 and 12.....75%  
Nos. 13 to 14.....70%  
Nos. 15 to 18.....75%  
Nos. 19 to 22.....75%

**Boxes, Axle—**

Common and Concord, not turned.....4%  
Common and Concord, turned.....4%  
Half Patent.....1b. 8%  
Caldwell new list.....50%  
Pullman.....50%

## Bait— Fishing—

Hendryx:  
A Bait.....20%  
B Bait.....20%  
Competitor Bait.....20%

## Balances— Sash—

Caldwell new list.....50%  
Pullman.....50%

## Spring—

Spring Balances.....50%  
Chatillon's:  
Light Spg. Balances.....40%  
Straight Balances.....40%  
Circular Balances.....50%  
Large Dial.....50%

## Barb Wire—See Wire, Barb.

## Bars— Crow—

Steel Crowbars, 10 to 40 lb. per lb., 7%  
No. 10 Ideal, Nickel Plate.....\$2.50

## Beams, Scale—

Scale Beams.....40%  
Chatillon's No. 1.....50%  
Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:  
No. 12 Wire Coppered  $\frac{1}{2}$  doz. \$6.25;  
Tinned.....\$1.00  
No. 11 Wire Coppered  $\frac{1}{2}$  doz. \$1.10;  
Tinned.....\$1.20  
No. 10 Wire Galvanized  $\frac{1}{2}$  doz. \$1.75  
Western W. G. Co.:  
No. 1 Electric..... $\frac{1}{2}$  gro. \$7.50  
No. 2 Buffalo..... $\frac{1}{2}$  gro. \$9.00  
No. 3 Perfection Dust..... $\frac{1}{2}$  gro. \$8.00

## Egg—

Holt-Lyon Co.:  
Holt, No. A, Japanese..... $\frac{1}{2}$  doz. \$1.20  
Holt, No. B, Japanese..... $\frac{1}{2}$  doz. \$1.50  
Holt, No. C, Japanese..... $\frac{1}{2}$  doz. \$2.00  
Holt, No. D, Japanese..... $\frac{1}{2}$  doz. \$2.25  
Lyon, No. 2, Japanese..... $\frac{1}{2}$  doz. \$1.25  
Lyon, No. 3, Japanese..... $\frac{1}{2}$  doz. \$1.50  
Taplin Mfg. Co.:  
No. 60 Improved Dover.....\$6.00  
No. 75 Improved Dover.....\$6.50  
No. 100 Improved Dover.....\$7.00  
No. 102 Improved Dover, Tin'd.....\$6.50  
No. 150 Improved Dover, Hotel.....\$12.00  
No. 182 Imp'd Dover, Hotel, T'd.....\$17.00  
No. 200 Imp'd Dover Tumbler.....\$8.50  
No. 202 Imp'd Dover Tumbler, T'd.....\$9.00  
No. 300 Imp'd Dover Mammoth.....\$12.00  
Western, W. G. Co., Buffalo.....\$7.00  
Wonder (S. B. & Co.),  $\frac{1}{2}$  gro. net, \$6.00

## Bellows—

Blacksmith, Standard List.....60%  
Hand—  
Inch.....6 7 8 9 10  
Doz.....\$4.75 5.70 6.65 7.60 8.85  
Molders—  
Inch.....9 10 11 12 14  
Doz.....\$8.00 9.00 10.50 12.50 14.50  
Bells— Cow—  
Ordinary goods.....75%  
High grade.....70%  
Jersey.....75%  
Texas Star.....30%

## Door—

Abbe's Gong.....45%  
Burton Gong.....50%  
Home, R. & E. Mfg. Co.'s.....55%  
Lever and Pull, Sargent's.....60%  
Trip Gong.....50%  
Yankee Gong.....55%

## Hand—

Hand Bells, Polished, Brass.....60%  
Nickel Plated.....60%  
Curtis.....60%  
Sue's Globe Hand Bells.....35%  
Silver Chime.....35%

## Miscellaneous—

Farm Bells.....1b. 2%  
Steel Alloy Church and School.....50%  
American Tube & Stamping Co.  
Gongs.....75%  
Table Call Bells.....50%

## Belting— Leather—

Extra Heavy, Short Lap.....60%  
Regular Short Lap.....60%  
Standard.....70%  
Light Standard.....70%  
Cut Leather Lacing.....60%  
Leather Lacing Sides, per sq. ft. 22¢

## Rubber—

Agricultural (Low Grade).....75%  
Common Standard.....70%  
Standard.....60%  
Extra.....60%  
High Grade.....50%

## Bench Stops—

See Stops, Bench

## Benders and Upsetters,

Tire—  
Detroit Perfected Tire Bender.....40%  
Green River Tire Benders and Upsetters.....20%  
Detroit Stoddard's Lightning Tire Upsetters, No. 1, \$1.25; No. 2, \$7.25; No. 3, \$10.50; No. 4, \$14.25; No. 5, \$20.50.

## Bicycle Goods—

John S. Leng's Son's 1902 List:  
Chain.....50%  
Parts.....50%  
Spokes.....50%  
Tubes.....50%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

## Blocks— Tackle—

Common Wooden.....70%  
Harts St. Tackle Blocks.....50%  
Hollow Steel Blocks, with Ford's Patent Sheaves.....50%  
Lane's Patent Automatic Lock and Junior.....30%  
Stowell's Novelty, Mal. Iron.....50%  
Stowell's Self Lancing.....60%  
See also Machines, Hoisting.

## Boards, Stove—

Zinc, Crystal, &c.....30%

## Boards, Wash—

See Washboards.

## Bobs, Plumb—

Keuffel & Esser Co.....30%

## Boils—

Carriage, Machine, &c.—  
Common Carriage (cut thread):  
% & 6 and smaller.....75%  
Larger and Longer.....70%  
Phila. Eagle \$3.00 list May 21, '90 80%

Bolt Ends, list Feb. 14, '95.....70%  
Machine, % & 4 and smaller.....75%  
Machine, larger and longer.....70%

## Door and Shutter—

Cast Iron Barrel, Japanese,  
Round Brass Knob:  
Inch.....3 4 5 6 8  
Per doz. \$9.50 10.50 11.50 12.50 13.50  
Cast Iron Spring Foot, Jap'd:  
Inch.....6 8 10  
Per doz. \$1.15 1.40 2.00  
Cast Iron Chain, Flat, Japanese:  
Inch.....6 8 10  
Per doz. \$0.95 1.25 1.55  
Cast Iron Shutter, Japanese,  
Brass Knobs:  
Inch.....6 8 10  
Per doz. \$0.80 1.00 1.20  
Wrt Barrel Jap'd.....80%  
Wrt "Bronzed".....80%  
Wrt Spring.....70%  
Wrt Shutter.....80%  
Wrt Square Neck.....75%  
Wrt Square.....80%  
Ives' Patent Door.....80%

## Plow and Stove—

Plow.....65%  
Stove.....82%

## Tire—

Common.....80%  
Norway Iron.....80%  
American Screw Company:  
Norway Phila., list Oct. 16, '84.....80%  
Eagle Phila., list Oct. 16, '84.....80%  
Bay State, list Dec. 28, '90.....80%  
Franklin Moore Co.:  
Norway Phila., list Oct. 16, '84.....80%  
Eagle Phila., list Oct. 16, '84.....80%  
Eclipse, list Dec. 28, '90.....80%  
Mount Carmel Bolt Co.:  
Norway Phila., list Oct. 16, '84.....80%  
Eagle Phila., list Oct. 16, '84.....80%  
Mount Carmel, list Dec. 28, '90.....80%  
Russell, Burdall & Ward Bolt & Nut Co.:  
Empire, list Dec. 28, '90.....80%  
Norway Phila., list Oct., '84.....80%  
Upon Nut Co.:  
Tire Bolts.....72%

## Bores, Tap—

Borers Tap, Ring, with Handle:  
Inch.....1 1/4 1 1/2 1 3/4 2  
Per doz. \$4.00 5.00 6.40 8.00  
Inch.....2 1/4 2 1/2 2 3/4 3  
Per doz. \$5.65 6.55 7.50 8.50  
Enterprise Mfg. Co., No. 1, \$1.25; No. 2, \$1.65; No. 3, \$2.50 each.....25%

## Boxes, Mitre—

C. E. Jennings & Co.....30%  
Langdon.....40%  
Perfection.....40%  
Seavey.....35%  
Stanley R. & L. Co.:  
Nos. 240 to 460.....30%  
Nos. 50 and 60.....35%

## Braces—

Common Ball, American, \$1.25@1.50  
Barber's.....50%  
Fray's Genuine Spofford's.....60%  
Fray's No. 70 to 120, 81 to 125, 207 to 411.....60%  
C. E. Jennings & Co.....50%  
Mayhew's Hatchet.....50%  
Mayhew's Quick Action Hay Pat.....50%  
Millers Falls Drill Braces.....25%  
P. S. & W. Co., Peck's Pat. 60@60%  
Stanley R. & L. Co.:  
Stanley.....35%  
Victor.....45%

## Brackets—

Wrought Steel.....80%  
Griffin's Pressed Steel.....80%  
Griffin's Folding Brackets.....70%  
Stowell's Cast Shelf.....75%  
Stowell's Sink.....60%  
Western, W. G. Co., Wire.....60%

## Bright Wire Goods—

See Wire and Wire Goods.

## Broilers—

Kilbourne Mfg. Co.....75%  
Western, W. G. Co.....80%  
Wire Goods Co.....70%

## Buckets, Galvanized—

Price per dozen,  
Quart.....19 12 14  
Water, Regular.....1.40 1.70 1.90  
Water, Heavy.....3.40 3.70 3.80  
Fire, Rd. Bottom.....2.30 2.35 2.95  
Well.....2.55 2.87 3.15

## Bucks, Saw—

Hoosier.....\$ gro. \$36.00

## Bull Rings—See Rings, Bull

## Butts— Brass—

Wrought, list Sept., '96.....20%  
Cast Brass, Tiebout's.....50%

## Cast Iron—

Fast Joint, Broad.....40%  
Fast Joint, Narrow.....40%  
Loose Joint.....70%  
Loose Pin.....70%  
Mayer's Hinges.....70%  
Parliament Butts.....70%

## Wrought Steel—

Table and Back Flaps.....75%  
Narrow and Broad.....75%  
Inside Blind.....75%  
Loose Pin.....75%  
Loose Pin, Jap'd.....70%  
Loose Pin, Ball and Stipple Tip.....85%  
Japanese Ball Tip Butts.....70%  
Bronzed, Wrt., Nar. and Inside Blind Butts.....55%

## Cages, Bird—

Hendryx, Brass:  
3000, 5000, 1100 series.....5%  
1200 series.....35%  
200, 300, 600 and 900 series.....60%



Hendryx Bronze: 100, 500 series. 40¢10¢  
Hendryx Enameled. 40¢10¢

### Calipers—See Compasses.

### Calks, Toe and Heel—

Blunt, 1 prong. . . . . per lb. 1¢1/2¢  
Sharp, 1 prong. . . . . per lb. 1¢1/2¢  
Gautier, Blunt. . . . . 1¢1/2¢  
Gautier, Sharp. . . . . 1¢1/2¢  
Perkins' Blunt Toe. . . . . 1¢1/2¢  
Perkins' Sharp Toe. . . . . 1¢1/2¢

### Can Openers—

See Openers, Can.

### Cans, Milk—

Illinois Pattern. . . . . \$1.35 1.85 2.05 each  
New York Pattern. . . . . 1.50 2.20 2.45 each  
Baltimore Pattern. . . . . 1.50 2.20 2.45 each  
Dubuque. . . . . 1.35 1.60 1.75 each

### Cans, Oil—

Buffalo Family Oil Cans:  
3 5 10 gal.  
\$18.00 60.00 125.00 gro., net.

### Caps, Percussion—

Eley's E. B. . . . . 52¢55¢  
G. D. . . . . per M 34¢35¢  
F. L. . . . . per M 40¢42¢  
G. E. . . . . per M 40¢42¢  
Muskot . . . . . per M 62¢63¢

### Primers—

Berdan Primers, 3¢ per M. . . . . 20%  
B. L. Caps (Sturtevant Shell). . . . . 2¢ per M. . . . . 20%  
All other primers per M. \$1.50@1.60

### Cartridges—

Blank Cartridges:  
32 C. F., \$5.50. . . . . 10¢5¢  
38 C. F., \$7.00. . . . . 10¢5¢  
22 cal. Rim, \$1.50. . . . . 10¢5¢  
32 cal. Rim, \$2.75. . . . . 10¢5¢  
B. B. Caps, Con. Ball, Sued. \$1.90  
B. B. Caps, Round Ball. . . . . \$1.49  
Central Fire. . . . . 25¢  
Target and Sporting Rifle. . . . . 15¢5¢  
Primed Shells and Bullets. 15¢10¢  
Rim Fire, Sporting. . . . . 50¢  
Rim Fire, Military. . . . . 15¢5¢

### Castors—

Bed . . . . . 70¢10¢10¢  
Plate . . . . . 60¢10¢10¢10¢  
Philadelphia . . . . . 75¢75¢10¢  
Acme, Ball Bearing. . . . . 35¢  
Boss . . . . . 70¢10¢  
Boss Anti-Friction. . . . . 70¢10¢  
Gem (Roller Bearing). . . . . 45¢  
Martin's Patent (Phoenix). . . . . 45¢  
Standard Ball Bearing. . . . . 45¢  
Tucker's Patent low list. . . . . 30¢  
Yale (Double Wheel) low list. . . . . 50¢

### Cattle Leaders—

See Leaders, Cattle.

### Chain, Coil—

American Coil, Straight Link:  
See Trade Report.

German Coil. . . . . 60¢10¢10¢70¢

### Halter—

Halter Chains. . . . . 60¢10¢60¢10¢10¢  
German Pattern Halter Chains,  
list July 24, '97. . . . . 60¢10¢10¢  
Covert Mfg. Co. . . . . 35¢5¢  
Halter . . . . . 70¢

### Cow Ties—

See Halters and Ties.

### Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.  
6 1/2-6 3/4, Strght, with ring. \$23.50  
6 1/2-6 2, Strght, with ring. \$24.50  
6 1/2-8 1/2, Strght, with ring. \$28.00  
6 1/2-10 1/2, Strght, with ring. \$32.00

NOTE—Add 2¢ per pair for Hooks.  
Twist Traces 2¢ per pair higher than  
Straight Link.

### Trace, Wagon and Fancy

Chains . . . . . 60¢5¢60¢10¢45¢

### Miscellaneous—

Jack Chain, list July 10, '93:  
Iron . . . . . 60¢10¢45¢70¢  
Brass . . . . . 60¢10¢60¢10¢10¢  
Safety Chain. . . . . 75¢75¢10¢  
Gal. Pump Chain. . . . . 10¢5¢5¢  
Covert Mfg. Co.:  
Breat . . . . . 35¢5¢  
Heel . . . . . 35¢5¢  
Rein . . . . . 35¢5¢  
Stallion . . . . . 35¢5¢

Covert Sad. Works:  
Breat . . . . . 70¢  
Hold Back. . . . . 70¢  
Rein . . . . . 70¢

Oneda Community:  
Am. Dog Leads and Kennel Chains. . . . . 40¢10¢5¢  
Niagara Dog Leads and Kennel  
Chains. . . . . 45¢10¢5¢  
Wire Goods Co.:  
Dog Chain. . . . . 70¢10¢  
Universal Dbl.-Jointed Chain. . . . . 50¢

### Chain and Ribbon, Sash—

Oneda Community:  
Copper Chain. . . . . 60¢5¢  
Steel Chain. . . . . 60¢  
Pullman:  
Bronze Chain. . . . . 60¢  
Steel Chain. . . . . 60¢10¢  
Sash Chain Attachments, per set. 8¢  
Alumino Sash Ribbon, per 100  
ft. . . . . \$1.50@3.00  
Sash Ribbon Attachments, per set. 8¢

### Chalk—(From Jobbers.)

Carpenters' Blue. . . . . gro. 38¢10¢  
Carpenters' Red. . . . . gro. 35¢35¢  
Carpenters' White. . . . . gro. 23¢30¢

### Checks, Door—

Bardley's. . . . . 45¢  
Eclipse. . . . . 60¢10¢  
Pullman, per gro. . . . . \$4.00  
Russwin. . . . . 60¢

### Chests, Tool—

American Tool Chest Co.:  
Boys' Chests, with Tools. . . . . 55¢  
Youths' Chests, with Tools. . . . . 40¢  
Gentlemen's Chests, with Tools. 30¢  
Farmers' Carpenters', etc., Chests,  
with Tools. . . . . 20¢  
Machinists' and Pipe Fitters'  
Chests, Empty. . . . . 50¢  
Tool Cabinets. . . . . 50¢  
C. E. Jennings & Co.'s Machinists'  
Tool Chests. . . . . 33¢10¢

### Chisels—

Socket Framing and Firmer  
Standard List. . . . . 75¢75¢10¢  
Buck Bros. . . . . 75¢75¢10¢  
Charles Buck. . . . . 30¢  
C. E. Jennings & Co. Socket Firmer  
No. 10. . . . . 60¢  
C. E. Jennings & Co. Socket Fram-  
ing No. 15. . . . . 60¢  
Ohio Tool Co.'s. . . . . 70¢  
Swan's. . . . . 30¢30¢5¢  
L. & J. White. . . . . 30¢30¢5¢

### Tanged—

Tanged Firmers. 33 1-3@33 1-3@10¢  
Buck Bros. . . . . 75¢75¢10¢  
Charles Buck. . . . . 30¢  
C. E. Jennings & Co. Nos. 15, 18, 25.  
L. & J. White, Tanged. . . . . 25¢5¢

### Cold—

Cold Chisels, good quality. 13¢15¢  
Cold Chisels, fair quality. 11¢12¢  
Cold Chisels, ordinary. . . . . 9¢10¢

### Chucks—

Beach Pat., each \$8.00. . . . . 35¢5¢  
Empire . . . . . 25¢  
Blacksmiths . . . . . 25¢  
Jacobs' Drill Chucks. . . . . 25¢  
Pratt's Positive Drive. . . . . 25¢  
Skinner Patent Chucks. . . . . 50¢  
Universal Lathe Chucks. . . . . 50¢  
Combination . . . . . 50¢  
Drill Chucks, New Model. . . . . 30¢  
Drill Chucks, Standard. . . . . 45¢  
Drill Chuck, Skinner Pat., all sizes. 30¢  
Drill Chucks, Positive Drive. . . . . 25¢  
Planer Chucks. . . . . 25¢  
Face Plate Jaws. . . . . 40¢  
Standard Tool Co.:  
Improved Drill Chuck. . . . . 45¢  
Union Mfg. Co.:  
Combination . . . . . 50¢  
Car Drill. . . . . 35¢  
Combination Geared Scroll. . . . . 40¢  
Geared Scroll. . . . . 40¢  
Independent . . . . . 50¢  
Independent Steel. . . . . 40¢  
Union Drill. . . . . 50¢  
Universal . . . . . 50¢  
Independent Iron F. Plate Jaws. 40¢  
Independent Steel F. Plate Jaws. 40¢  
Westcott Patent Chucks:  
Lathe Chucks. . . . . 50¢  
Little Giant Auxiliary Drill. . . . . 50¢  
Little Giant Double Grip Drill. . . . . 50¢  
Little Giant Drill, Improved. . . . . 50¢  
Oneda Drill. . . . . 50¢  
Scroll Combination Lathe. . . . . 50¢

### Clamps—

Adjustable, Hammers. . . . . 20¢20¢5¢  
Cabinet, Sargent's. . . . . 50¢10¢  
Carriage Makers', P. S. & W.  
Co. . . . . 40¢10¢50¢  
Besly, Parallel. . . . . 35¢10¢  
Lineman's, Utica Drop Forge & Tool  
Co. . . . . 40¢  
Saw Clamps, see Vises, Saw Filers.  
Wood Workers, Hammers. . . . . 40¢10¢

### Cleaners, Drain—

Iwan's Champion, Adjustable. . . . . 55¢  
Iwan's Champion, Stationary. . . . . 45¢

### Sidewalk—

Star Socket, All Steel. . . . . \$1.05 net  
Star Shank, All Steel. . . . . \$3.24 net  
W. & C. Shank, All Steel. . . . . 7 1/2 in. \$3.00; 8 in. \$3.25.

### Cleavers, Butchers—

Foster Bros. . . . . 30¢  
New Haven Edge Tool Co.'s. . . . . 45¢  
Fayette R. Plumb. . . . . 35¢35¢10¢  
L. & J. White. . . . . 30¢

### Clippers—

Chicago Flexible Shaft Company:  
3/8 Chicago Horse. . . . . \$9.75 15%  
1902 Chicago Horse. . . . . 60.75 15%  
20th Century Horse, each. . . . . 85.00 20%  
Lightning Belt. . . . . 115.00 40%  
Chicago Belt. . . . . 120.00 15%  
Stewart's Patent Sheep. . . . . 121.75 20%

### Clips, Axle—

Eagle, 5-16 and 3/4 in. 75¢75¢10¢  
Norway, 5-16 and 3/4 in. 60¢10¢70¢

### Cloth and Netting, Wire

—See Wire, &c.

### Cocks, Brass—

Hardware Hat:  
Compression, Plain Bibbs,  
Globe, Kerosene, Racking,  
&c., Cocks. . . . . 75¢75¢5¢

### Coffee Mills—

See Mills, Coffee.

### Collars, Dog—

Nickel Chain, Walter B. Stevens &  
Son's list. . . . . 40¢  
Leather, Walter B. Stevens & Son's  
list. . . . . 40¢

### Combs, Curry—

Metal Stamping Co. . . . . 40¢

### Mane and Tail—

Covert's Saddlery Works. . . . . 60¢10¢

### Compasses, Dividers, &c.

Ordinary Goods. . . . . 75¢75¢10¢  
Bemis & Call Hdq. & Tool Co.:  
Dividers. . . . . 65¢  
Calipers, Double. . . . . 65¢  
Calipers, Inside or Outside. . . . . 65¢  
Calipers, Wing. . . . . 60¢  
Compasses. . . . . 50¢

### Conductor Pipe—

L. C. L. to Dealers:  
Galvanized.  
Territory. . . . . Nested, Not nested.  
Eastern. . . . . 70¢15¢  
Central. . . . . 70¢75¢  
Southern. . . . . 70¢85¢  
So. Western. . . . . 60¢80¢

### Copper.

1 1/2 16 oz.  
Eastern. . . . . 50¢10¢  
Central. . . . . 50¢75¢  
Southern. . . . . 50¢65¢  
So. Western. . . . . 50¢25¢  
Terms, 60 days; 2% cash 10 days. Fac-  
tory shipments generally delivered.  
See also Eave Troughs.

### Coolers, Water—

Gal. each. . . . . 3 4 6 8  
Labrador. . . . . \$1.20 \$1.50 \$1.80 \$2.10 \$2.70  
Gal. . . . . 3 4 6 8  
Iceland, ea. \$1.80 \$2.10 \$2.40 \$3.00  
Gal. . . . . 2 3 4 6 8  
Galvanized, ea. \$1.85 \$2.00 \$2.25 \$2.50 \$3.90  
Galvanized, Lined, side handles.  
Gal. . . . . 2 3 4 6 8  
Each. . . . . \$1.95 \$2.15 \$2.40 \$3.30 \$1.15  
White Enameled. . . . . 25¢  
Agate Lined. . . . . 25¢

### Coopers' Tools—

See Tools, Coopers'.

### Coopers' Soldering—

Soldering Coppers, 3 lbs. to pair  
and heavier, 20 1/2¢21 1/2¢; light-  
er than 3 lbs. to pair. 22 1/2¢23 1/2¢

### Cord—

Braided, Drab. . . . . 10¢35¢  
Braided, White, Com. Nos. 6  
to 13. . . . . 10¢23¢24¢  
Cable Laid Italian. . . . . 10¢  
lb., A, 18¢; B, 16¢  
Common India. . . . . 10¢10¢10¢  
Cotton Sash Cord, Twisted. 17¢19¢  
Patent Russia. . . . . 10¢14¢  
Cable Laid Russia. . . . . 10¢15¢  
India Hemp, Braided. 10¢18¢  
India Hemp, Twisted. 10¢13¢  
Patent India, Twisted. 10¢13¢  
Anniston Cordage Co.: Braided Cotton.  
Old Cord, Nos. 7 to 12. 25¢ No. 7,  
23¢ No. 8, 24¢ No. 9, 25¢ No. 10,  
26¢ No. 11, 27¢ No. 12, 28¢ No. 13,  
29¢ No. 14, 30¢ No. 15, 31¢ No. 16,  
32¢ No. 17, 33¢ No. 18, 34¢ No. 19,  
35¢ No. 20, 36¢ No. 21, 37¢ No. 22,  
38¢ No. 23, 39¢ No. 24, 40¢ No. 25,  
41¢ No. 26, 42¢ No. 27, 43¢ No. 28,  
44¢ No. 29, 45¢ No. 30, 46¢ No. 31,  
47¢ No. 32, 48¢ No. 33, 49¢ No. 34,  
50¢ No. 35, 51¢ No. 36, 52¢ No. 37,  
53¢ No. 38, 54¢ No. 39, 55¢ No. 40,  
56¢ No. 41, 57¢ No. 42, 58¢ No. 43,  
59¢ No. 44, 60¢ No. 45, 61¢ No. 46,  
62¢ No. 47, 63¢ No. 48, 64¢ No. 49,  
65¢ No. 50, 66¢ No. 51, 67¢ No. 52,  
68¢ No. 53, 69¢ No. 54, 70¢ No. 55,  
71¢ No. 56, 72¢ No. 57, 73¢ No. 58,  
74¢ No. 59, 75¢ No. 60, 76¢ No. 61,  
77¢ No. 62, 78¢ No. 63, 79¢ No. 64,  
80¢ No. 65, 81¢ No. 66, 82¢ No. 67,  
83¢ No. 68, 84¢ No. 69, 85¢ No. 70,  
86¢ No. 71, 87¢ No. 72, 88¢ No. 73,  
89¢ No. 74, 90¢ No. 75, 91¢ No. 76,  
92¢ No. 77, 93¢ No. 78, 94¢ No. 79,  
95¢ No. 80, 96¢ No. 81, 97¢ No. 82,  
98¢ No. 83, 99¢ No. 84, 100¢ No. 85,  
101¢ No. 86, 102¢ No. 87, 103¢ No. 88,  
104¢ No. 89, 105¢ No. 90, 106¢ No. 91,  
107¢ No. 92, 108¢ No. 93, 109¢ No. 94,  
110¢ No. 95, 111¢ No. 96, 112¢ No. 97,  
113¢ No. 98, 114¢ No. 99, 115¢ No. 100.

### Wire, Picture—

List Oct., '00. . . . . 85¢10¢10¢85¢10¢10¢65¢  
Hendryx Standard Wire Picture Cord.  
85¢10¢45¢

### Cradles—

Grain . . . . . 40¢12 1/2¢

### Crayons—

White Round Crayons, 7¢6¢1/2¢  
Cases, 100 gro., \$5.00 at factory.  
D. M. Stewart Mfg. Co.:  
Jumbo Crayons. . . . . gr. \$3.50  
Metal Workers' Crayons, gr. \$2.50  
Soapstone Pencils, round, flat  
or square. . . . . gr. \$1.50  
Rolling Mill Crayons. . . . . gr. \$2.50  
Railroad Crayons (composition).  
gr. \$2.00

Zelicker's Lumber:  
Red, Blue, Green. . . . . gr. \$1.50  
Black. . . . . gr. \$1.00  
See also Chalk.

### Crooks, Shepherds—

Fort Madison, Heavy. . . . . gr. doz. \$7.00  
Fort Madison, Light. . . . . gr. doz. \$6.50

### Crow Bars—See Bars, Crow.

### Cultivators—

Victor Garden. . . . . 50¢

### Cutlery, Table—

International Silver Company:  
No. 12 M'd'm Knives, 1817. gr. doz. \$3.50  
Star, Eagle, Rogers & Hamilton  
and Anchor. . . . . gr. doz. \$3.00  
Wm. Rogers & Son. . . . . gr. doz. \$2.50

### Cutters—

H. H. Mayhew Co. . . . . 40¢  
Red Devil. . . . . 50¢  
Smith & Hemenway Co. . . . . 50¢  
Woodward. . . . . 40¢

### Meat and Food—

American. . . . . 30¢  
Nos. . . . . 1 2 3 4 B 5  
Each. . . . . \$5 \$7 \$10 \$25 \$50 \$60  
Enterprise. . . . . 25¢25¢7 1/2¢  
Nos. . . . . 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100  
Dixon's. . . . . 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100  
Ideal. . . . . \$14.00 \$17.00 \$19.00 \$30.00  
Little Giant. . . . . gr. doz. 40¢50¢  
Nos. . . . . 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100  
N. E. Food Choppers. . . . . 25¢  
New Triumph No. 605. gr. doz. \$24.00

Ruewin Food, No. 1, \$24.00; No. 2,  
\$27.00; No. 3, \$30.00; No. 4, \$33.00;  
Woodruff's. . . . . gr. doz. 40¢50¢  
Nos. . . . . 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100  
Enterprise Beef Shavers. . . . . 50¢

### Slaw and Kraut—

Henry Dighton & Sons:  
Slaw, Corn Grater, &c. . . . . 40¢

Kraut Cutters, 24 x 7, 26 x 8, 30  
x 9. . . . . 55¢  
Kraut Cutters, 36 x 12, 40 x 12. . . . . 40¢  
J. M. Mast Mfg. Co.:  
Slaw Cutters, 1 Knife. . . . . doz. \$3.00  
Combined Slaw Cutter and Corn  
Grater. . . . . doz. \$4.00  
Tucker & Dorsey Mfg. Co.:  
Kraut Cutters. . . . . 40¢  
Slaw Cutters, 1 Knife. . . . . gr. \$18@20  
Slaw Cutters, 2 Knife. . . . . gr. \$22@24

### Tobacco—

All Iron, Cheap. . . . . doz. \$4.25@4.50  
Enterprise. . . . . 25¢30¢  
National, gr. doz., No. 1, \$21; No. 2,  
\$18. . . . . 40¢  
Sargent's, gr. doz., No. 2. . . . . 60¢  
Sargent's, Nos. 12 and 21. . . . . 60¢10¢



**Fasteners, Blind—**

Zimmerman's ..... 50¢10¢  
Wallings ..... 40¢10¢

**Cord and Weight—**

Ives ..... 60¢

**Faucets—**

Cork Lined ..... 50¢10¢10¢  
Metallic Key, Leather Lined ..... 60¢10¢70¢

Red Cedar ..... 40¢10¢50¢  
Petroleum ..... 70¢10¢75¢

B. & L. B. Co.:  
Metal Key ..... 60¢10¢  
Star ..... 60¢10¢

West Lock ..... 50¢10¢  
John Sommer's Peerless Tin Key ..... 40¢  
John Sommer's Boss Tin Key ..... 50¢  
John Sommer's Victor M. Key ..... 50¢10¢  
John Sommer's Duplex Metal Key ..... 40¢  
John Sommer's Diamond Lock ..... 50¢  
John Sommer's X. L. Cork Lined ..... 50¢  
John Sommer's Reliable Cork Lined ..... 50¢10¢

John Sommer's Chicago Cork Lined ..... 60¢  
John Sommer's O. K. Cork Lined ..... 50¢  
John Sommer's No Brand, Cedar ..... 50¢  
John Sommer's Perfection, Cedar ..... 40¢  
McKenna, Brass:

Burglar Proof, N. P. ..... 25¢  
Improved, ¾ and 1 inch ..... 25¢

Self Measuring, ¾ doz. \$36.00 ..... 40¢10¢  
Enterprise, ¾ doz. \$36.00 ..... 40¢10¢  
Lane's, ¾ doz. \$36.00 ..... 40¢10¢  
National Measuring, ¾ doz. \$36.00 ..... 40¢10¢

**Felice Plates—**

See Plates, Felice.

**Files— Domestic—**

List revised Nov. 1, 1899.

Best Brands ..... 70¢10¢75¢45¢  
Standard Brands, 75¢10¢75¢10¢10¢  
Lower Grade ..... 75¢10¢10¢80¢10¢

**Imported—**

Stubs' Tapers, Stubs' List, July 24, '97 ..... 33 1-3 to 40¢

**Fixtures, Fire Door—**

Richards Mfg. Co., No. 103 ..... \$3.75  
Special, No. 104 ..... \$3.75  
Fusible Links, No. 96 ..... 50¢  
Expansion Bolts, No. 107 ..... 60¢10¢

**Grindstone—**

Net Prices:

Inch ..... 15 17 19 21 24  
Per doz. \$2.15 2.85 3.25 3.75 4.50

P. S. & W. Co. .... 30¢10¢40¢  
Reading Hardware Co. .... 70¢  
Sargent's ..... 70¢  
Stowell's Giant Grindstone Hanger ..... 40¢10¢

Stowell's Grindstone Fixtures, Extra Heavy ..... 50¢10¢10¢  
Stowell's Grindstone Fixtures, Light ..... 60¢10¢

**Fodder Squeezers—**

See Compressors.

**Forks—**

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Ezy Potato ..... 60¢10¢  
Victor, Hay ..... 60¢15¢25¢  
Victor, Manure ..... 60¢15¢25¢  
Victor, Header ..... 60¢15¢25¢  
Champion, Hay ..... 60¢  
Champion, Header ..... 60¢  
Champion, Manure ..... 60¢15¢25¢  
Columbia, Hay ..... 60¢25¢  
Columbia, Manure ..... 60¢25¢  
Columbia, Spading ..... 70¢125¢  
Hawkeye Wood Barley ..... 60¢25¢  
W. & C. Potato Digger ..... 60¢10¢  
Acme Hay ..... 60¢25¢  
Acme Manure, 4 tine ..... 60¢10¢5¢  
Jackson Steel Barley ..... 60¢25¢  
Kansas Header ..... 60¢  
W. & C. Favorite Wood Barley ..... 60¢  
Plated—See Spoons.

**Frames— Saw—**

White, 8'x7' Bar, per doz. 75¢80¢4  
Red, 8'x7' Bar, per doz. \$1.00¢1.25  
Red, Dbl. Brace, per doz. \$1.40¢1.50

**Freezers, Ice Cream—**

Qt. .... 1 2 3 4 6  
Each ..... \$1.30 \$1.60 \$1.90 \$2.20 \$2.50

**Fruit and Jelly Presses—**

See Presses, Fruit and Jelly.

**Fry Pans—See Pans, Fry.****Fuse— Per 1000 Feet.**

Hemp ..... 2.75  
Cotton ..... 3.20  
Waterproof Spl. Taped. .... 3.65  
Waterproof Dbl. Taped. .... 4.40  
Waterproof Tpl. Taped. .... 5.15

**Gates, Molasses and Oil—**

Stebbins' Pattern, 80¢10¢80¢10¢5¢

**Gauges—**

Marking, Mortise, etc. .... 50¢10¢50¢10¢10¢5¢

Chapin-Stephens Co.:  
Marking, Mortise, etc. .... 50¢10¢50¢10¢10¢5¢  
Scholl's Patent ..... 50¢10¢50¢10¢10¢5¢  
Door Hangers ..... 50¢10¢50¢10¢10¢5¢  
Stanley R. & L. Co.'s Butt and Rabbet Gauge ..... 35¢  
Marking and Mortise ..... 60¢  
Wire, Brown & Sharpe's ..... 25¢  
Wire, Morse ..... 25¢  
Wire, P. S. & W. Co. .... 30¢4

**Gimlets— Single Cut—**

Numbered assortments, per gro.

Nail, Metal, No. 1, \$2.00; 2, \$2.50  
Spike, Metal, No. 1, \$4.00; 2, \$4.50  
Nail, Wood Handled, No. 1, \$2.50; 2, \$3.00  
Spike, Wood Handled, No. 1, \$3.50; 2, \$4.00

**Glass, American Window**

See Trade Report.

**Glasses, Level—**

Chapin-Stephens Co. .... 60¢10¢10¢10¢

**Glue, Liquid Fish—**

Bottles or Cans, with Brush ..... 25¢50¢

Cans (½ pts., pts., qts., ½ gal., gal.) ..... 25¢18¢

International Glue Co. (Martin's) ..... 40¢

**Grease, Axle—**

Common Grade ..... gro. \$4.50¢5.50

Dixon's Everlasting, in boxes, ½ doz. 1 lb. \$1.20; 2 lb. \$2.00

Helmet Hard Oil ..... 25¢

**Grips, Nipple—**

Perfect Nipple Grips ..... 40¢10¢2¢

**Griddles, Soapstone—**

Pike Mfg. Co. .... 33¢10¢33¢10¢

**Grindstones—**

Bicycle Emery Grinder ..... \$6.50

Bicycle Grindstones, each ..... \$2.50¢3.00

Pike Mfg. Co.:  
Improved Family Grindstones, per inch, ¾ doz. .... \$2.00  
Pike Mower and Tool Grinder, each ..... \$6.00  
Velox Ball Bearing, Mounted, Angle Iron Frames, each ..... \$3.00

**Halters and Ties—**

Cow Ties ..... 60¢10¢60¢10¢

Covert Mfg. Co.:  
Web ..... 35¢45¢  
Jute Rope ..... 50¢  
Sisal Rope ..... 30¢10¢  
Cotton Rope ..... 45¢  
Hemp Rope ..... 45¢  
Covert's Saddlery Works:  
Web and Leather Halters ..... 70¢  
Jute and Manila Rope Halters ..... 70¢  
Sisal Rope Halters ..... 60¢20¢  
Jute, Manila and Cotton Rope Ties ..... 70¢  
Sisal Rope Ties ..... 60¢10¢

Oneda Community:  
Am. Coil and Halters ..... 40¢40¢45¢  
Am. Cow Ties ..... 45¢60¢  
Niagara Coil and Halters ..... 45¢60¢45¢  
Niagara Cow Ties ..... 45¢60¢40¢10¢45¢  
E. T. Rugg & Co.:  
Leather Halters ..... 50¢  
Web Halters and Webbing ..... 60¢  
Jute and Sisal Rope Halters ..... 60¢  
Jute and Sisal Horse and Cattle Ties ..... 60¢  
Cotton Horse Ties ..... 60¢  
Livery Ties, Braided ..... 60¢

**Hammers—**

Handled Hammers—  
Heller's Machinists' ..... 40¢10¢40¢10¢10¢  
Heller's Farriers ..... 40¢10¢40¢10¢10¢  
Magnetic Tack, Nos. 1, 2, 3, \$1.25, \$1.50, \$1.75 ..... 50¢  
Peck, Stow & Wilcox, Steel ..... 50¢  
Fayette R. Plumb:  
Plumb, A. E. Nail ..... 33¢47¢33¢47¢33¢47¢47¢  
Engineers' and B. S. Hand ..... 50¢75¢50¢10¢10¢47¢45¢  
Machinists' Hammers ..... 50¢45¢60¢10¢45¢  
Riveting and Timmer ..... 40¢25¢40¢10¢25¢  
Sargent's C. S. New List ..... 40¢

**Heavy Hammers and Sledges—**

Under 3 lb., per lb. 50¢ ..... 80¢10¢10¢85¢

3 to 5 lb., per lb. 40¢ ..... 80¢10¢10¢85¢

Over 5 lb., per lb. 30¢ ..... 85¢85¢10¢  
Wilkinson's Smiths' ..... lb. 9¢40¢10¢

**Handles—**

Agricultural Tool Handles  
Axe, Pick, etc. .... 60¢45¢60¢10¢45¢  
Hoe, Rake, etc. .... 45¢50¢45¢  
Fork, Shovel, Spade, etc. .... 45¢50¢45¢  
D. Handles ..... 40¢  
Cross-Cut Saw Handles—  
Atkins ..... 40¢  
Champion ..... 45¢15¢10¢  
Dixon's ..... 50¢  
Mechanics' Tool Handles—  
Auger, assorted ..... gro. \$2.50¢3.25  
Bradawl ..... gro. \$1.65¢1.85  
Chisel Handles:  
Apple Tanged Firmer, gro. assorted ..... \$2.40¢3.43  
Hickory Tanged Firmer, gro. assorted ..... \$2.15¢3.10  
Apple Socket Firmer, gro. assorted ..... \$1.75¢1.95  
Hickory Socket Firmer, gro. assorted ..... \$1.45¢1.60  
Hickory Socket Framing, gro. assorted ..... \$1.60¢1.75  
File, assorted ..... gro. \$1.30¢1.40  
Hammer, Hatchet, Axe, etc. .... 60¢10¢60¢10¢10¢  
Hand Saw, Varnished, doz. 80¢85¢; Not Varnished ..... 65¢75¢  
Plane Handles:  
Jack, doz. 50¢; Jack, Bolted 75¢  
Fore, doz. 45¢; Fore, Bolted 75¢  
Chapin-Stephens Co.:  
Carving Tools ..... 40¢40¢40¢  
Chisel ..... 65¢65¢10¢  
File and Awl ..... 65¢65¢10¢  
Saw and Plane ..... 40¢40¢10¢  
Screw Driver ..... 40¢40¢10¢  
Miller Falls Adj. and Hatchet Auger Handles ..... 15¢10¢  
Nicholson Simplicity File Handle ..... 40¢  
Hangers—  
NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, etc.  
Barn Door, New Pattern, Round Groove, Regular:  
Inch ..... 3 4 5 6 8  
Single Doz. \$0.90 1.25 1.60 1.95 2.50  
Barn Door, New England Pattern, Check Back, Regular:  
Inch ..... 3 4 5 6  
Single Doz. .... \$1.30 1.85 2.50 3.00  
Allith Mfg. Co.:  
Reliable, No. 1 ..... per doz. \$9.00  
Reliable, No. 2 ..... per doz. \$9.00

**Chicago Spring Butt Co.: Friction**

Occultating ..... 25¢  
Big Twin ..... 25¢  
Chisholm & Moore Mfg. Co.:  
Baggage Car Door ..... 50¢  
Elevator ..... 30¢  
Railroad ..... 50¢  
Crone & Carrier Mfg. Co.:  
Loose Axle ..... 60¢10¢  
Roller Bearing ..... 70¢  
Griffin Mfg. Co.:  
Solid Axle, No. 10, \$12.00 ..... 70¢  
Roller Bearing, No. 11, \$15.00 ..... 70¢  
Roller Bearing, Ex. Hy., No. 22, \$18.00 ..... 70¢  
Hinged Hangers, \$16.00 ..... 60¢10¢  
Lane Bros. Co.:  
Parlor, Ball Bearing ..... \$4.00  
Parlor, Standard ..... \$2.15  
Parlor, No. 105 ..... \$2.85  
Parlor, New Model ..... \$2.80  
Parlor, New Champion ..... \$2.25  
Barn Door, Standard ..... 60¢45¢  
Hinged ..... net \$6.40  
Corrod ..... 60¢45¢  
Special ..... 70¢45¢  
Lawrence Bros.:  
Advance ..... 60¢10¢  
Cleveland ..... 75¢  
Clipper, No. 75 ..... 60¢  
Crown ..... 60¢10¢  
East Parlor Door, Dbl. Sets, \$2.50; Single Sets, \$1.25 ..... 70¢  
Giant ..... 60¢45¢  
Hummer ..... 70¢45¢  
New York ..... 60¢10¢  
Peelers ..... 60¢10¢  
Sterling ..... 60¢10¢  
McKinney Mfg. Co.:  
No. 1, Special, \$15. .... 60¢10¢  
No. 2, Standard, \$18. .... 60¢10¢  
Hinged Hangers ..... 50¢  
Meyers Starke Co. Hangers ..... 60¢45¢  
Richards Mfg. Co.:  
Pioneer Wood Track No. 3, \$2.00  
Ball B'r'g St'l Track No. 10, 50¢10¢  
Roller B'r'g St'l Track No. 12, \$2.15  
Roller B'r'g St'l Track No. 13, \$2.30  
Roller B'r'g St'l Track No. 19, 60¢10¢  
Adjustable Track Tandem Trolley Track No. 16 ..... 50¢10¢  
Seal, Steel Track No. 8 ..... \$2.25  
Auto Adj. Track No. 22 ..... 50¢10¢  
Trolley B. D. No. 17 ..... \$1.25  
Trolley F. D. No. 120 ..... \$2.10  
Trolley F. D. No. 121 ..... \$2.25  
Trolley F. D. No. 150 ..... \$2.35  
Safety Underwriters F. D. No. 101 ..... 50¢  
Tandem No. 41, 2½ and 3 60¢10¢  
Palace, Adjustable Track No. 132 ..... 50¢10¢  
No. 122 ..... 50¢10¢  
Ives' Wood Track No. 1 ..... \$2.00  
Trolley B. D. No. 20 ..... 50¢10¢  
Trolley B. D. No. 24 ..... \$1.30  
Trolley B. D. No. 27 ..... \$1.40  
Trolley B. D. No. 28 ..... \$1.60  
Roller Bearings No. 30, 41, 43 ..... 45¢  
Anti-friction No. 42 ..... 75¢  
Hinged Tandem No. 48 ..... 60¢45¢  
Folding Door B. B. Swivel No. 135 ..... 40¢  
Safety Door Hanger Co.:  
Storm King Sashy ..... 60¢  
U. S. Standard Hinge ..... 60¢  
Stowell Mfg. & Foundry Co.:  
Acme Parlor Ball Bearing ..... 40¢  
Ajax Hinge Door ..... 50¢10¢45¢  
Apex Parlor Door ..... 50¢10¢45¢  
Atlas ..... 60¢  
Baggage Car Door ..... 50¢  
Climax Anti-Friction ..... 50¢10¢  
Elevator ..... 40¢  
Express ..... 50¢  
Freight Car Door ..... 60¢  
Instantaneous ..... 60¢10¢  
Lundry Parlor Door ..... 50¢10¢  
Magic ..... 60¢  
Matchless ..... 60¢10¢  
Nansen ..... 70¢45¢  
Parlor Door ..... 50¢10¢  
Ives Wood Track ..... 50¢10¢  
Rex Hinge Door ..... 50¢  
Street Car Door ..... 50¢  
Steel, Nos. 300, 404, 500 ..... 50¢10¢  
Underwriters' Fire Door ..... 40¢  
Wild West Warehouse Door ..... 50¢  
Zenith ..... 50¢10¢  
A. L. Sweet Iron Works:  
Check Back ..... 70¢  
Climax Anti-Friction ..... 50¢10¢  
Eagle ..... 70¢  
Hyo Hinge ..... 60¢  
No. Perfection ..... 60¢  
Pilot ..... 60¢  
Pilot Hinge ..... 60¢  
Rider Wooster ..... 65¢  
Western Pattern ..... 70¢  
Taylor & Boggs F'y Co.'s Kid-  
ney's Roller Bearing, 50¢15¢10¢45¢  
Wilcox Mfg. Co.:  
Bike Roller Bearing, ½ doz. \$3.00  
C. J. Roller Bearing ..... 60¢10¢  
Cycle Ball Bearing ..... 50¢  
Dwarf Ball Bearing ..... 40¢  
Ives Wood Track ..... 60¢10¢  
L. T. Roller Bearing ..... 60¢10¢45¢  
New Era Roller Bearing, 50¢10¢  
O. K. Roller Bearing, 60¢10¢45¢  
Prindle Wood Track ..... 60¢  
Richards' for Wood Track ..... 60¢  
Richards' Steel Track ..... 50¢10¢  
Spencer Roller Bearing ..... 60¢10¢  
Tandem, Nos. 1 and 2 ..... 60¢  
Underwriters' Roller Bearing ..... 40¢  
Velvet ..... 60¢  
Wilcox Auditorium Ball B'r'g ..... 20¢  
Wilcox Barn Trolley No. 125 ..... 40¢  
Wilcox Elev. Door, Nos. 112 and 122½ ..... 50¢  
Wilcox Elev. Door, No. 132 ..... 40¢  
Wilcox Fire Trolley, Roller Bearing ..... 50¢  
Wilcox Le Boy Noiseless Ball Bearing ..... 60¢  
Wilcox New Century, 50¢10¢10¢  
Wilcox O. K. Trolley ..... 50¢  
Wilcox Trolley Ball Bearing, 40¢  
Wilcox Wideman Narrow Gauge Ball Bearing ..... 40¢  
For Track, see Rail.

**Hangers— Garment—**

Pullman Trouser, ½ gro., 1 pair Flat Alumin. \$9.00; 1 pair Round Nick-  
eled, \$9.00; 4 pair Round Nickeled ..... \$27.00  
Victor's Folding ..... ½ gro. \$9.00  
Western, W. G. Co. .... 70¢10¢

**Gate—**

Myers' Patent Gate Hangers, ½ doz. net ..... \$4.50

**Joist and Timber—**

Lane Bros. Co. .... 30¢

**Haps—**

Griffin's Security Hap ..... 50¢  
McKinney's Perfect Hap, ½ doz. 50¢

**Hatchets—**

Regular list, first quality ..... 50¢  
Second quality \$1.00 per doz. less than first quality.

**Heaters, Carriage—**

Clark, No. 5, \$1.75; No. 5B, \$2.00; No. 3, \$2.25; No. 3D, \$2.75; No. 1D, \$3.00; No. 3E, \$3.25; No. 1, \$3.50 ..... 15¢  
Clark Coal, ½ doz. \$0.75 ..... 10¢

**Hinges—**

Blind and Shutter Hinges—  
Surface Gravity Locking Blind:  
(Victor; National; 1868 O. P.;  
Niagara; Clark's O. P.;  
Clark's Tip; Buffalo.)  
No. .... 1 3 5  
Doz. pair ..... \$0.75 1.35 2.70

**Mortise Shutter:**

(L. & P., O. S., Diez, etc.)  
No. .... 1 ½ 2 2½  
Doz. pair ..... \$0.70 .65 .60 .55

Mortise Reversible Shutter (Buf-  
falo, etc.):  
No. .... 1 1½ 2  
Doz. pair ..... \$0.70 .65 .60

North's Automatic Blind Fixtures,  
No. 2, for Wood, \$9.00; No. 3, for  
Brick, \$11.50 ..... 10¢  
Charles Parker Co. .... 70¢75¢  
Parker Wire Goods Co.:  
Hale & Benjamin Automatic Blind  
Hinges ..... 20¢  
Hale's Blind Awning Hinges, No.  
110, for wood, \$9.00; No. 111, for  
brick, \$9.00 ..... 20¢  
Reading Gravity ..... 20¢  
Sargent's, Nos. 1, 3, 11 and 15, 75¢10¢  
Stanley's Steel Gravity Blind Hinges,  
½ doz. sets, without screws, \$9.50;  
with screws, \$12.00  
Wrightsville Hardware Co.:  
O. S. Lull & Porter ..... 75¢10¢45¢  
Acme, Lull & Porter ..... 75¢10¢  
Queen City Reversible ..... 75¢10¢  
Shepard's Noiseless, Nos. 60, 65,  
66 ..... 75¢10¢  
Niagara Gravity Locking, Nos. 1,  
3 & 5 ..... 75¢10¢45¢  
1868, Old Pat'n, Nos. 1, 3 & 5 ..... 75¢10¢45¢  
Tip Pat'n, Nos. 1, 3 & 5 ..... 75¢10¢45¢  
Buffalo Gravity Locking, Nos. 1,  
3 & 5 ..... 75¢10¢45¢  
Shepard's Double Locking, Nos. 1,  
& 2 ..... 70¢  
Champion Gravity Locking, Nos. 75, 75  
Steamboat Gravity Locking, Nos. 10, 10  
Pioneer, Nos. 90, 45 & 54 ..... 70¢  
Empire, Nos. 10 & 103 ..... 70¢  
W. H. Co.'s Mortise Gravity Lock-  
ing, No. 2 ..... 60¢

**Gate Hinges—**

Clark's or Shepard's—Doz. sets:  
No. .... 1 2 3  
Hinges with L'ties, \$2.00 2.70 5.00  
Hinges only ..... 1.40 2.05 3.80  
Latches only ..... .70 .70 .35

**New England:**

With Latch ..... doz. .... \$2.00  
Without Latch ..... doz. .... \$1.60  
Reversible Self-Closing:  
With Latch ..... doz. .... \$1.75  
Without Latch ..... doz. .... \$1.35

**Western:**

With Latch ..... doz. \$1.75  
Without Latch ..... doz. \$1.15

Wrightsville Hardware Co.:  
Shepard's or Clark's, doz. sets,  
No. 1 ..... 1 2 3  
Hinges with Latches, \$2.00 2.70 5.00  
Hinges only ..... 1.40 2.05 3.80  
Latches only ..... .70 .70 1.35

**Pivot Hinges—**

Bommer Bros. Pivot ..... 40¢  
Lawson Mfg. Co. Matchless ..... 45¢

**Spring Hinges—**

Holdback Cast Iron—See Trade

Non-Holdback, Cast Iron } Report.

**J. Bardley:**

Bardley's Non-Checking Mor-  
tise Floor Hinges ..... 45¢  
Bardley's Patent Checking ..... 15¢  
Bommer Bros.:  
Bommer Ball Bearing Floor  
Hinges ..... 40¢  
Bommer Spring Hinges ..... 40¢  
No. 900 Wrot. Steel Hold Back  
Hinge ..... gr. \$9.00

Chicago Spring Butt Co.:  
Chicago Spring Hinges ..... 25¢  
Triple End Spring Hinges ..... 30¢  
Chicago (Ball Bearing) Floor  
Hinge ..... 50¢  
Garden City Engine House ..... 25¢  
Keene's Saloon Door ..... 25¢  
Columbian Hardware Co.:  
Acme Wrought Steel ..... 30¢  
Acme, Brass ..... 25¢  
American ..... 30¢  
Columbia, No. 14 ..... gr. \$9.00  
Columbia, No. 18 ..... gr. \$25.00  
Columbia, Adjustable, No. 1 ..... gr. \$12.00  
Gem, new list ..... 30¢  
Clover Leaf ..... gr. \$12.00  
Oxford, new list ..... 30¢  
Lawson Mfg. Co. Matchless ..... 30¢  
Richards Mfg. Co.:  
Superior Double Acting Floor  
Hinges ..... 40¢  
Shelby Spring Hinge Co.:  
Buckeye All Steel Holdback  
Screen Door ..... gr. \$9.00  
Ball Bearing Floor Hinge ..... 50¢  
Ohio Detachable Screen Door  
Hinge ..... gr. \$12.00  
The Stover Mfg. Co.:  
Ideal, No. 16, Detachable ..... gr. \$12.50  
Ideal, No. 4 ..... gr. \$9.00  
New Idea No. 1 ..... gr. \$9.00  
New Idea Double Acting ..... 45¢  
Van Wagener:  
Ball Bearing ..... 25¢  
No. 77 Sh't Steel Holdbk. ½ gro. pr. \$9

Extra 10% often given on most of these Hinges.

**Wrought Iron Hinges—**  
Strap and T Hinges, &c., list  
December 20, 1904:

Light Strap Hinges.....70%	
Heavy Strap Hinges.....75%	
Light T Hinges.....65%	
Heavy T Hinges.....60%	
Extra H y T Hinges.....70%	Extra 10% @ 1045%
Hinge Hasps.....50%	
Cor. Heavy Strap.....75%	
Cor. Ex. Heavy T.....70%	
Screw Hook.....6 to 12 in. lb. 3 1/2	
and Strap.....1 1/2 to 20 in. lb. 3 1/2	
Screw Hook and Eye.....22 to 36 in. lb. 3 1/2	

**Hitchers, Stall—**  
Covert Mfg. Co., Stall Hitchers.....35%**Hods—Coal—**

Inch	Per doz.
Galv. Open.....15 16 17 18	
Jap. Open.....\$2.50 2.75 3.00 3.25	
Galv. Funnel.....\$1.90 2.10 2.25 2.55	
Jap. Funnel.....\$3.00 3.30 3.60 3.90	
Jap. Funnel.....\$2.45 2.65 2.85 3.30	

**Masons' Etc.—**  
Avery-Caldwell Mfg. Co.:  
Steel Brick.....each \$1.00  
Steel Mortar.....each \$1.25  
Cleveland Wire Spring Co.:  
Steel Brick.....each \$0.95  
Steel Mortar, No. 138.....each \$1.25**Hoes—Eye—**  
Scovill and Oval Pattern.....  
60% @ 1040% @ 1045% @ 1050%**Grub, list Feb. 23, 1899.....**  
70% @ 1045% @ 1050%**D. & H. Scovill.....**  
33%**Handled—**  
NOTE—Manufacturers are selling  
from the list of September 1, 1904, but  
many jobbers are still using list of August  
1, 1899, or selling at net prices.**Cronk's Weeding No. 1, \$2.00; No. 2, \$2.25**  
Ft. Madison Cotton Hoe.....70% @ 1040%  
Ft. Madison Crescent Cultivator Hoe.....  
70% @ 1040%  
Ft. Madison Mattock Hoe.....70% @ 1040%  
Regular Weight.....70% @ 1040%  
Junior Size.....70% @ 1040%  
Ft. Madison Sprouting Hoe.....70% @ 1040%  
Ft. Madison Lize Tobacco.....70% @ 1040%**Kretzinger's Cut Easy.....**  
70% @ 1040%  
Warren Hoe.....70% @ 1040%  
W. & C. Ivanhoe.....70% @ 1040%  
B. B. O. in. Cultivator Hoe.....70% @ 1040%  
Acme Weeding.....70% @ 1040%  
W. & C. L'ning Shuffie Hoe.....70% @ 1040%**Hoisting Apparatus—**  
See Machines, Hoisting.**Holders—Bit—**  
Angular, 70% doz. \$24.00.....45% @ 1040%**Door—**  
Hardley's.....45%  
Empire.....50%  
Pullman.....50%**File and Tool—**  
Nicholson File Holders and File  
Handles.....33% @ 1040%**Fruit Jar—**  
Triumph Fruit Jar Holder, 70% gross,  
\$10.90; 70% doz.....\$1.25**Hones—Razor—**  
Pike Mfg. Co., Belgian, German and  
Swaty.....50%**Hooks—Cast Iron—**  
Bird Cage, Reading.....40%  
Bird Cage, Sargent's List.....50% @ 1040%  
Ceiling, Sargent's List, Nos. 29, 32,  
33, 129, 132, 133 and 135.....50% @ 1040%  
Clothes Line, Reading List.....40%  
Clothes Line, Sargent's List.....50% @ 1040%  
Coat and Hat, Sargent's List.....50% @ 1040%  
Clothes Line, Stowell's.....70%  
Coat and Hat, Reading.....45% @ 20%  
Coat and Hat, Stowell's.....70%  
Coat and Hat, Wrightsville.....60%  
Harness, Reading List.....40%  
Harness, Stowell's.....60%  
School House, Stowell's.....70%**Wire—**  
Belt.....80% @ 1040%  
Wirr C. & H. Hooks.....75% @ 1040% @ 75% @ 1040%  
Columbian Hdw Co., Gen.....70% @ 1040%  
Parker Wire Goods Co., King.....75% @ 1040%  
Van Wagoner, Coat and Hat.....70%  
Western W. G. Co. Molding.....75%  
Wire Goods Co.:  
Acme.....60% @ 1040%  
Chief.....70%  
Crown.....70%  
Czar.....65%  
V Brace.....75%  
Czar Harness.....50% @ 1040%**Wrought Iron—**  
Box, 6 in., per doz., \$1.00; 8 in.,  
\$1.25; 10 in., \$2.50.  
Cotton.....doz. \$1.05 @ \$1.25  
Wrought Staples, Hooks, &c.....  
See Wrought Goods.**Miscellaneous—**  
Hooks, Bench, see Stops, Bench.  
Bush, Light, doz. \$4.75; Medium,  
\$5.35; Heavy, \$6.25  
Grass, best, all sizes, per doz. \$1.50  
Grass, common grades, all sizes,  
per doz.....\$1.39  
Whiffletree.....lb. 5% @ 6%  
Hooks and Eyes:  
Brass.....60% @ 1045% @ 60% @ 1040%  
Malleable Iron.....70% @ 1040% @ 70% @ 1040%  
Covert Mfg. Co. Gate and Scuttle  
Hooks.....35%  
Covert Saddlery Works' Self Locking  
Gate and Door Hook.....60%  
Ft. Madison Cut-Easy Corn Hooks.....  
70% doz. \$3.25 net**Bench Hooks—See Bench Stops.**  
Corn Hooks—See Knives, Corn.**Horse Nails—**  
See Nails, Horse.**Horseshoes—**  
See Shoes, Horse.**Hose, Rubber—****Garden Hose, 3/4-inch—****Competition.....ft. 5 @ 6 @****3-ply Standard.....ft. 8 @ 9 @****4-ply Standard.....ft. 10 @ 11 @****3-ply extra.....ft. 11 @ 13 @****4-ply extra.....ft. 14 @ 16 @****Cotton Garden, 3/4-in., coupled:****Low Grade.....ft. 8 @ 9 @****Fair Quality.....ft. 10 @ 11 @****Irons—Sad—****From 4 to 10.....lb. 2 1/2 @ 3 1/2****B. B. Sad Irons.....lb. 3 1/2 @ 4 1/2****Chinese Laundry.....lb. 4 @ 5****Chinese Sad.....lb. 4 @ 4 1/2****Mrs. Potts', cents per set:****Nos.....50 55 60 65****Jap'd Tops.....60 59 72 69****Tin'd Tops.....65 62 75 72****New England Pressing, lb. 3 1/2 @ 4 1/2****Pinking—****Irons, Soldering****See Coppers.****Jacks, Wagon—****Covert Mfg. Co.:  
Auto Screw.....30% @ 2%****Steel.....45%****Covert's Saddlery Works:  
Daisy.....60% @ 10%****Victor.....60%****Lockport.....50%****Lane's Steel.....30% @ 1040%****Richards' Tiger Steel, No. 130.....50% @ 10%****Smith & Hemenway Co.'s.....25%****Kettles—****Brass, Spun, Plain.....20% @ 25%****Enamelled and Cast Iron—See Ware,****Hollow.****Knives—****Butcher, Kitchen, &c.—****Foster Bros' Butcher, &c.....30%****Wilkinson Shear & Cutlery Co.'s.....50%****Corn—****Withington Acme, 70% doz. \$2.65;****Dent, \$2.75; Adj. Serrated, \$2.20;****Serrated, \$2.10; Yankee No. 1, \$1.80;****Yankee No. 2, \$1.15.****Drawing—****Standard List.....75%****C. E. Jennings Co., Nos. 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000**



Slater's Felt (roll 500 sq. ft.) .75¢  
R. M. Stone Surfaced Roofing  
(roll 110 sq. ft.) .12.75

**Sand and Emery—**  
Flint Paper and Cloth .60¢@1.10¢  
Garnet Paper and Cloth .25¢  
Emery Paper and Cloth .50¢@1.00¢

**Parers— Apple—**  
Advance .40 doz. \$4.00  
Baldwin .40 doz. \$4.00  
Bonanza Improved .40 doz. \$4.00  
Daisy .40 doz. \$4.00  
Dandy .40 doz. \$4.00  
Eureka Improved .40 doz. \$4.00  
Family Bay State .40 doz. \$4.00  
Improved Bay State .40 doz. \$4.00  
Little Star .40 doz. \$4.00  
New Lightning .40 doz. \$4.00  
Reading 72 .40 doz. \$4.00  
Reading 78 .40 doz. \$4.00  
Rocking Table .40 doz. \$4.00  
Turn Table .40 doz. \$4.00  
White Mountain .40 doz. \$4.00

**Potato—**  
Saratoga .40 doz. \$4.00  
White Mountain .40 doz. \$4.00

**Picks and Mattocks—**  
List Feb. 23, 1899 .75¢@1.50¢  
Cronk's Handled Garden Mattock  
40 doz. \$6.40 .33¢

**Pinking Irons—**  
See Irons, Pinking.

**Pins, Escutcheon—**  
Brass .60¢@1.00¢  
Iron, list Nov. 11, '85 .60¢@1.00¢

**Pipe, Cast Iron Soil—**  
Carload lots.  
Standard, 2-6 in. .60¢  
Extra Heavy, 2-6 in. .70¢  
Fittings .75¢

**Pipe, Merchant—**  
Consumers, Carloads.  
Steel. Iron.  
Blk. Galv. Blk. Galv.  
1/2 & 1/4 in. .71¢ 55¢ 68¢ 52¢  
3/4 & 1/2 in. .75¢ 63¢ 72¢ 60¢  
1 & 1/2 in. .79¢ 69¢ 77¢ 67¢  
7 to 12 in. .74¢ 59¢ 72¢ 56¢

**Pipe, Vitrified Sewer—**  
Carload lots.  
Standard Pipe and Fittings, 2  
to 24 in.:  
New England .68¢  
New York and New Jersey .71¢  
Maryland, Delaware, E. Pa. .75¢  
West, Pa. and West Va. .77¢  
Virginia .78¢  
Ohio, Michigan and Ky. .77¢  
Indiana .77¢

NOTE.—Carload lots are generally de-

**Pipe, Stove—**  
Edwards' Nested Stove Pipe:  
C. L. L. C. L.  
5 in., per 100 joints. \$7.00 \$8.00  
6 in., per 100 joints. 7.50 8.50  
7 in., per 100 joints. 8.50 9.50

**Planes and Plane Irons—**  
Wood Planes—  
Bench, first qual. .40¢@1.10¢  
Bench, second qual. .30¢@1.00¢  
Molding .33¢@1.00¢  
Bailey's (Stanley R. & L. Co.) .40¢  
Chapin-Stephens Co. .40¢@1.10¢  
Bench, First Quality .40¢@1.10¢  
Bench, Second Quality .30¢@1.00¢  
Molding .33¢@1.00¢  
Toy and German .40¢@1.10¢  
Chapin's .40¢  
Ohio Tool Co. .40¢  
Bench, First Quality .40¢@1.10¢  
Bench, Second Quality .30¢@1.00¢  
Molding .33¢@1.00¢  
Adjustable Wood Bottom .60¢  
Union .60¢

**Iron Planes—**  
Bailey's (Stanley R. & L. Co.) .40¢  
Chapin's Iron Planes .30¢@1.00¢  
Miscellaneous Planes (Stanley R. & L. Co.) .35¢  
Ohio Tool Co.'s Iron Planes .60¢  
Sargent's .60¢@1.10¢  
Union .60¢

**Plane Irons—**  
Wood Bench Plane Irons .35¢@1.00¢

Buck Bros. .35¢@1.00¢  
Chapin-Stephens Co. .30¢  
Ohio Tool Co. .30¢  
Stanley R. & L. Co. .35¢  
Union .50¢  
L. & J. White .25¢@1.00¢

**Planters, Corn, Hand—**  
Kohler's Eclipse .40 doz. \$2.50

**Plates—**  
Felloe .10 doz. \$1.40  
Self-Sealing Pie Plates (S. S. & Co.) 40 doz. \$2.00 .50¢

**Pliers and Nippers—**  
Button Pliers .75¢@1.00¢  
Gas Burner, per doz. 5 in. \$1.25  
@ \$1.30; 6 in. \$1.45 @ \$1.50  
Gas Pipe .7 8 10 12 in.  
\$2.00 \$2.25 \$3.00 \$3.75  
Acme Nippers .50¢@1.00¢  
Cronk & Carrier Mfg. Co.:  
American Button .75¢@1.10¢  
Cronk's .60¢  
Stub's Pattern .60¢  
Combination and others .33¢  
Heller's Farriers' Nippers, Pincers  
and Tools .40¢@1.00¢@1.10¢  
The Nettleton Mfg. Co. Reversible  
Cutting Nippers .50¢  
P. S. & W. Finners' Cutting Nip-  
pers .40¢  
Swedish Slide, End and Diagonal Cut-  
ting Pliers .80¢  
Utica Drop Forge & Tool Co.:  
Pliers and Nippers, all kinds .40¢

**Plumbs and Levels—**  
Chapin-Stephens Co.:  
Plumbs and Levels .30¢@1.00¢  
Chapin's Imp. Brass Cor. .30¢@1.00¢  
Pocket Levels .30¢@1.00¢  
Dixton's Plumbs and Levels .70¢  
Dixton's Pocket Levels .10¢  
C. E. Jennings & Co.'s Iron .30¢

C. E. Jennings & Co.'s Iron, Adjust-  
able .40¢@1.10¢  
Stanley R. & L. Co. .35¢  
Stanley's Duplex .35¢  
Woods Extension .33¢

**Poachers, Egg—**  
Buffalo Steam Egg Poachers, 40 doz.  
No. 1, \$6.00; No. 2, \$9.00; No. 3,  
\$9.00; No. 4, \$12.00 .50¢

**Points, Glaziers—**  
Bulk and 1-lb. papers, 10.8¢@9¢  
1/4-lb. papers .10.9¢@9¢  
1/2-lb. papers .10.9¢@9¢

**Pokes, Animal—**  
Ft. Madison Hawkeye .40 doz. \$3.25  
Ft. Madison Western .40 doz. \$4.00

**Police Goods—**  
Manufacturers' Lists .25¢@1.50¢

**Polish—Metal Etc—**  
Glasbrite No. 2, 5 lb can (powder),  
each, \$1.25; 40 doz. \$12.00; No. 2, 10 lb  
can (cake), each, \$2.50; 40 doz. \$24.00.  
Prestoline Liquid, No. 1 (1/4 pt.) .40¢  
doz. \$3.00; No. 2 (1/4 pt.) .40¢  
doz. \$3.00.  
Prestoline Paste .40¢  
George William Hoffman:  
U. S. Metal Polish Paste, 3 oz.  
boxes, 40 doz. \$5.40; 1 lb  
boxes, 40 doz. \$2.25.  
U. S. Liquid, 8 oz. cans, 40 doz.,  
\$1.25; 40 doz. \$12.00.  
Barkeepers' Friend Metal Polish, 40  
doz. \$1.75; 40 doz. \$18.00.  
Wynn's White Silk, 1/2 pt. cans, 40  
doz. \$2.00

**Stove—**  
Black Eagle Benzine Paste, 5 lb cans,  
40 doz. \$10.00

Black Eagle, Liquid, 1/2 pt. cans, 40  
doz. \$7.50  
Black Jack Paste, 1/2 lb cans, 40 gr. \$9.00  
Black Kid Paste, 5 lb cans, each, \$6.65  
Ladd's Black Beauty Liquid, per  
100 lbs. \$6.75  
Joseph Dixon's, 40 gr. \$5.75  
Dixon's Plumbago .40¢  
Firestone .40¢  
Gem, 40 gr. \$4.50 .10¢  
Japanese .40 gr. \$3.50 .10¢  
Jet Black .40 gr. \$3.50 .10¢  
Peerless Iron Enamel, 10 oz cans,  
40 doz. \$1.50

Wynn's:  
Black Silk, 5 lb pail, each 70¢  
Black Silk, 1/2 lb box, 40 doz. \$1.00  
Black Silk, 8 oz. box, 40 doz. \$0.75  
Black Silk, 1/4 pt. liq., 40 doz. \$1.00

**Peppers, Corn—**  
1 qt., Square .40 gr. \$9.00  
1 qt., Round .40 gr. \$10.00  
1 1/2 qt., Square .40 gr. \$11.00  
2 qt., Square .40 gr. \$13.00

**Post Hole and Tree Au-  
gers and Diggers—**  
See also Diggers, Post Hole, &c.

**Posts, Steel—**  
Steel Fence Posts, each, 5 ft. 42¢;  
6 ft. 46¢; 6 1/2 ft. 48¢.  
Steel Hitching Posts .40¢@1.50

**Potato Parers—**  
See Parers, Potato.

**Pots, Glue—**  
Enameled .40¢  
Tinned .35¢

**Powder—**  
In Canisters:  
Duck, 1 lb. .40¢ each 45¢  
Fine Sporting, 1 lb. .40¢ each 75¢  
Rifle, 1/2 lb. .40¢ each 15¢  
Rifle, 1-lb. .40¢ each 25¢  
In Kegs:  
25-lb. kegs .40¢ each \$1.50  
King's Semi-Smokeless:  
Keg (25 lb bulk) .35¢  
Half Keg (12 1/2 lb bulk) .35¢  
Quarter Keg (6 1/4 lb bulk) .35¢  
Case 24 (1 lb cans bulk) .35¢  
Half case (1 lb cans bulk) .35¢  
King's Smokeless:  
Shot Gun Rifle  
Keg (25 lb bulk) .35¢  
Half Keg (12 1/2 lb bulk) .35¢  
Quarter Keg (6 1/4 lb bulk) .35¢  
Case 24 (1 lb cans bulk) .35¢  
Half case 12 (1 lb c. bk.) .35¢  
Robin Hood Smokeless Shot Gun .35¢@20¢

**Presses—**  
Fruit and Jelly—  
Enterprise Mfg. Co. .30¢@25¢

**Seal Presses—**  
Morrill's No. 1, 40 doz. \$20.00 .50¢

**Pruning Hooks and Shears**  
See Shears.

**Pullers, Cork—**  
Invincible Cork Puller .40¢@1.00

**Pullers, Nail—**  
Cyclops .50¢  
Miller's Falls, No. 3, 40 doz. \$12.00 .35¢@1.00

Morrill's No. 1, Nail Puller, 40 doz.  
\$20.00 .35¢@1.00  
Pearson No. 1, Cyclops Spike Puller,  
each \$30.00 .50¢  
Pelican, 40 doz. \$30.00 .60¢@1.00  
Scranton, Case Lots:  
No. 2B (large) .50¢  
No. 2B (small) .50¢  
Smith & Hemenway Co.:  
Diamond B, No. 2, case lots .40¢  
Diamond B, No. 3, case lots .40¢  
Giant No. 1, 40 doz. \$15.00 .50¢  
\$16.50; No. 3, \$15.00 .35¢  
Staple Pullers .60¢  
Parrot Tack and Stub Puller, 40 doz.  
75¢; 40 gr. \$6.00

**Pulleys, Single Wheel—**  
Inch .1 1/2 2 3  
doz. \$0.30 \$1.50 \$1.05

Hay Fork, Swivel or Solid Eye,  
doz., 1 in. \$1.25; 5 in. \$1.55

Inch .1 1/2 2 3  
Hot House, doz. \$0.65 \$1.00 \$1.80  
Inch .1 1/2 2 3  
Screw, doz. \$0.16 \$1.19 \$1.30

Inch .1 1/2 2 3  
Side, doz. \$0.25 \$1.40 \$1.55 \$1.60  
Inch .1 1/2 2 3  
Stowell's:

Ceiling or End, Anti-Friction .60¢@1.00¢  
Dumb Waiter, Anti-Friction .60¢@1.00¢  
Electric Light .60¢@1.00¢  
Side, Anti-Friction .60¢@1.00¢

**Sash Pulleys—**  
Common Frame; Square or  
Round End, per doz, 1 1/2 and  
2 in. .10¢@1.10¢

Auger Mortise, no Face Plate,  
per doz, 1 1/2 and 2 in. .10¢@1.10¢

Acme .1 1/2 in. 16¢; 2 in. 19¢  
Fox-All-Steel, Nos. 3 and 7, 2 in.  
doz. \$5.00

Ideal .70¢@1.00¢  
Grand Rapids All Steel Noiseless .50¢  
Niagara .1 1/2 in. 16¢; 2 in. 19¢  
No. 26, Troy .1 1/2 in. 14¢; 2 in. 16¢  
Star .1 1/2 in. 16¢; 2 in. 19¢

Tackle Blocks—See Blocks.

**Pumps—**  
Cistern .60¢@1.00¢  
Pitcher Spout .80¢@1.00¢  
Wood Pumps, Tubing, &c. .45¢@1.00¢

Barnes Dbl. Acting (low list) .50¢  
Barnes' Pitcher Spout .75¢@1.00¢  
Contractors' Rubber Diaphragm No.  
2, B. & L. Block Co. .51¢

Daisy Spray Pump .40 doz. \$6.75  
Flint & Walling's, Fast Mail Hand,  
(low list) .55¢  
Flint & Walling's Fast Mail (low  
list) .55¢

Flint & Walling's Tight Top Pitcher .80¢  
National Specialty Mfg. Co. Measur-  
ing .60¢ .30¢  
Mechanical Sprayer .40¢

Myers Pumps (low list) .50¢  
Myers' Power Pumps .50¢  
Myers' Spr. Pumps .50¢@1.00¢

**Pump Leathers—**  
Plunger and Lower Valve—Per  
gro.:  
Inch .1 1/2 2 3 4  
\$2.20 \$2.50 \$2.75 \$3.00

Inch .1 1/2 2 3 4  
\$3.30 \$3.60 \$3.85 \$4.10 \$4.40

**Plunger Cup Leathers—Per 100:**  
Inch .1 1/2 2 3 4  
\$2.75 \$3.85 \$5.00 \$6.00

**Punches—**  
Saddlers' or Drive, good .40¢  
doz. \$50¢@75¢

Spring, single tube, good qual-  
ity .40¢  
Revolving (4 tubes) .40¢

Remis & Call Co.'s Cast St'l Drive .50¢  
Remis & Call Co.'s Check .50¢  
Morrill's Nos. 1AA, 1A, 1B, 1C,  
15¢ .50¢

Hercules, 1 die, each \$5.00 .50¢  
Niagara Hollow Punches .40¢  
Niagara Solid Punches .40¢  
Steel Screw, B. & K. Mfg. Co. .50¢  
Tinnars' Hollow, P. S. & W. Co. .40¢  
Tinnars' Solid, P. S. & W. Co. .40¢  
doz. \$1.41 .60¢

**Rail—Barn Door, &c.—**  
Cast Iron Barn Door; Flange  
Screw Holes for Rd. Groove  
Wheels:  
1/2 3/4 1 in.  
\$2.50 \$3.00 \$4.40 100 feet.

Angular for Sq. Groove Wheels:  
Small. Med. Large.  
\$2.00 \$2.70 \$3.60 100 feet.

**Sliding Door, Painted Iron—**  
1/4 in. 1b. 35¢ .25¢@1.25¢

**Sliding Door, Wrought Brass—**  
1/4 in. 1b. 35¢ .30¢

**Althoff Mfg. Co.:  
No. 1, Reliable Hgr. Track, 40 ft. 5 1/2¢  
No. 2, Reliable Hgr. Track, 40 ft. 7¢  
Cronk's:  
Double Braced Steel Rail, 40 ft. 2 1/4¢  
O. N. T. Rail .25¢**

Griffin's:  
xxx 100 ft. 1 x 3-16 in. \$3.00;  
1 1/4 x 3-16 in. 3.50;  
Hinged Hanger, 100 ft. 1 x 3-16  
in. \$3.10; 1 1/4 x 3-16 in. \$3.00.

**Lane's:  
Hinged Track, 100 ft. 1 in. \$3.40;  
1 1/4 in. \$3.50; 1 1/2 in. \$4.00;  
Standard, 1 1/4 in. 100 ft. \$4.00  
Lawrence Bros.:  
100 ft. No. 201, \$4.00; No. 202, \$4.00  
New York, 1 x 3-16 in. 100 ft. \$2.75**

**McIntosh's:  
Hinged Hanger Rail, 40 ft. 11¢ .50¢  
None Better .30¢  
Standard .40¢  
Myers' Stayon Track .60¢@1.00¢**

**Richards' Mfg. Co.:  
Common 1 3/4 in. \$2.25; 1 1/2 x  
3-16, \$2.50; 1 1/4 x 3-16, \$2.75;  
Special Hinged Hanger Rail .60¢@1.00¢  
Lag Screw Rail, No. 65 .50¢  
Gauge Trolley Track, 40 ft. No. 31,  
9¢; No. 32, 14¢; No. 33, 20¢**

**Safety Door Hanger Co.'s Storm  
King Safety .60¢  
Storm Door Hanger Co.'s U. S.  
Standard .60¢**

**Stowell's:  
Cast Rail .40¢  
Steel Rail, Plain .25¢  
Wrought Bracket, 1 1/4 x 3-16 in. 3¢  
Wrought Bracket, 1 1/4 x 3-16 in. 3¢**

Swett's Hylo, 40 ft. 11¢ .60¢  
P. L. B. Steel Rail .40¢  
No. 0, 1 x 3-16 .40¢  
No. 1, 1 x 3-16 .40¢

**Rakes—**  
NOTE.—Manufacturers are  
selling from the list of September  
1, 1904, but many jobbers are still  
using list of August 1, 1899, or  
selling at net prices.

Fort Madison Red Head Lawn .33¢  
Fort Madison Blue Head Lawn .27¢  
Jackson Lawn, 25 and 30 teeth, 40  
doz. net .42¢

Cronk's:  
New Champion Garden, 40 doz. 12  
teeth, \$15.00; 14, \$16.50; 16, \$18.00 .75¢  
Victor Garden, 40 doz. 12 teeth,  
\$15.00; 14, \$16.50; 16, \$18.00 .80¢

**Queen City Lawn, 40 doz., 20 teeth,  
\$3.45; 24, \$3.60 .net.**

**Anticlog Lawn, 40 doz. .40¢  
Malleable Garden .70¢@1.00¢**

**Kohler's:  
Lawn Queen, 20-teeth .40 doz. \$3.45  
Lawn Queen, 24-teeth .40 doz. \$3.60  
Paragon, 20-teeth .40 doz. \$2.75  
Paragon, 24-teeth .40 doz. \$3.00  
Steel Garden, 14-teeth .40 doz. \$2.40  
Malleable Garden, 14-teeth .40 doz. \$2.40**

**Weldless Steel Garden .75¢@2.00**

**Rasps, Horse—**  
Dieston's .75¢  
Heller Bros. .70¢@1.00¢  
McCaffrey's American St'l .60¢@1.00¢  
New Nicholson .70¢@1.00¢  
See also Files.

**Razors—**  
Boras—1 C. .60¢  
Fox Razors, No. 42, 40 doz. \$20.00 .25¢  
Fox Razors, No. 44, 40 doz. \$20.00 .25¢  
Fox Razors, No. 52, Platina .40¢  
doz. \$25.00 .25¢

**Red Devil .50¢  
Silberstein:  
Carbo Magnetic .51¢  
Griffon, No. 65 .51¢  
Griffon, No. 80 .51¢  
All other Razors .40¢**

**Safety Razors—**  
Silberstein .40¢

**Reels, Fishing—**  
Hendryx:  
M. Q. 6 A, 6 B, 6 C, 6 D, 6 E, 6 F, 6 G, 6 H, 6 I, 6 J, 6 K, 6 L, 6 M, 6 N, 6 O, 6 P, 6 Q, 6 R, 6 S, 6 T, 6 U, 6 V, 6 W, 6 X, 6 Y, 6 Z, 6 AA, 6 AB, 6 AC, 6 AD, 6 AE, 6 AF, 6 AG, 6 AH, 6 AI, 6 AJ, 6 AK, 6 AL, 6 AM, 6 AN, 6 AO, 6 AP, 6 AQ, 6 AR, 6 AS, 6 AT, 6 AU, 6 AV, 6 AW, 6 AX, 6 AY, 6 AZ, 6 BA, 6 BB, 6 BC, 6 BD, 6 BE, 6 BF, 6 BG, 6 BH, 6 BI, 6 BJ, 6 BK, 6 BL, 6 BM, 6 BN, 6 BO, 6 BP, 6 BQ, 6 BR, 6 BS, 6 BT, 6 BU, 6 BV, 6 BW, 6 BX, 6 BY, 6 BZ, 6 CA, 6 CB, 6 CC, 6 CD, 6 CE, 6 CF, 6 CG, 6 CH, 6 CI, 6 CJ, 6 CK, 6 CL, 6 CM, 6 CN, 6 CO, 6 CP, 6 CQ, 6 CR, 6 CS, 6 CT, 6 CU, 6 CV, 6 CW, 6 CX, 6 CY, 6 CZ, 6 DA, 6 DB, 6 DC, 6 DD, 6 DE, 6 DF, 6 DG, 6 DH, 6 DI, 6 DJ, 6 DK, 6 DL, 6 DM, 6 DN, 6 DO, 6 DP, 6 DQ, 6 DR, 6 DS, 6 DT, 6 DU, 6 DV, 6 DW, 6 DX, 6 DY, 6 DZ, 6 EA, 6 EB, 6 EC, 6 ED, 6 EE, 6 EF, 6 EG, 6 EH, 6 EI, 6 EJ, 6 EK, 6 EL, 6 EM, 6 EN, 6 EO, 6 EP, 6 EQ, 6 ER, 6 ES, 6 ET, 6 EU, 6 EV, 6 EW, 6 EX, 6 EY, 6 EZ, 6 FA, 6 FB, 6 FC, 6 FD, 6 FE, 6 FF, 6 FG, 6 FH, 6 FI, 6 FJ, 6 FK, 6 FL, 6 FM, 6 FN, 6 FO, 6 FP, 6 FQ, 6 FR, 6 FS, 6 FT, 6 FU, 6 FV, 6 FW, 6 FX, 6 FY, 6 FZ, 6 GA, 6 GB, 6 GC, 6 GD, 6 GE, 6 GF, 6 GG, 6 GH, 6 GI, 6 GJ, 6 GK, 6 GL, 6 GM, 6 GN, 6 GO, 6 GP, 6 GQ, 6 GR, 6 GS, 6 GT, 6 GU, 6 GV, 6 GW, 6 GX, 6 GY, 6 GZ, 6 HA, 6 HB, 6 HC, 6 HD, 6 HE, 6 HF, 6 HG, 6 HH, 6 HI, 6 HJ, 6 HK, 6 HL, 6 HM, 6 HN, 6 HO, 6 HP, 6 HQ, 6 HR, 6 HS, 6 HT, 6 HU, 6 HV, 6 HW, 6 HX, 6 HY, 6 HZ, 6 IA, 6 IB, 6 IC, 6 ID, 6 IE, 6 IF, 6 IG, 6 IH, 6 II, 6 IJ, 6 IK, 6 IL, 6 IM, 6 IN, 6 IO, 6 IP, 6 IQ, 6 IR, 6 IS, 6 IT, 6 IU, 6 IV, 6 IW, 6 IX, 6 IY, 6 IZ, 6 JA, 6 JB, 6 JC, 6 JD, 6 JE, 6 JF, 6 JG, 6 JH, 6 JI, 6 JJ, 6 JK, 6 JL, 6 JM, 6 JN, 6 JO, 6 JP, 6 JQ, 6 JR, 6 JS, 6 JT, 6 JU, 6 JV, 6 JW, 6 JX, 6 JY, 6 JZ, 6 KA, 6 KB, 6 KC, 6 KD, 6 KE, 6 KF, 6 KG, 6 KH, 6 KI, 6 KJ, 6 KK, 6 KL, 6 KM, 6 KN, 6 KO, 6 KP, 6 KQ, 6 KR, 6 KS, 6 KT, 6 KU, 6 KV, 6 KW, 6 KX, 6 KY, 6 KZ, 6 LA, 6 LB, 6 LC, 6 LD, 6 LE, 6 LF, 6 LG, 6 LH, 6 LI, 6 LJ, 6 LK, 6 LL, 6 LM, 6 LN, 6 LO, 6 LP, 6 LQ, 6 LR, 6 LS, 6 LT, 6 LU, 6 LV, 6 LW, 6 LX, 6 LY, 6 LZ, 6 MA, 6 MB, 6 MC, 6 MD, 6 ME, 6 MF, 6 MG, 6 MH, 6 MI, 6 MJ, 6 MK, 6 ML, 6 MM, 6 MN, 6 MO, 6 MP, 6 MQ, 6 MR, 6 MS, 6 MT, 6 MU, 6 MV, 6 MW, 6 MX, 6 MY, 6 MZ, 6 NA, 6 NB, 6 NC, 6 ND, 6 NE, 6 NF, 6 NG, 6 NH, 6 NI, 6 NJ, 6 NK, 6 NL, 6 NM, 6 NN, 6 NO, 6 NP, 6 NQ, 6 NR, 6 NS, 6 NT, 6 NU, 6 NV, 6 NW, 6 NX, 6 NY, 6 NZ, 6 OA, 6 OB, 6 OC, 6 OD, 6 OE, 6 OF, 6 OG, 6 OH, 6 OI, 6 OJ, 6 OK, 6 OL, 6 OM, 6 ON, 6 OO, 6 OP, 6 OQ, 6 OR, 6 OS, 6 OT, 6 OU, 6 OV, 6 OW, 6 OX, 6 OY, 6 OZ, 6 PA, 6 PB, 6 PC, 6 PD, 6 PE, 6 PF, 6 PG, 6 PH, 6 PI, 6 PJ, 6 PK, 6 PL, 6 PM, 6 PN, 6 PO, 6 PP, 6 PQ, 6 PR, 6 PS, 6 PT, 6 PU, 6 PV, 6 PW, 6 PX, 6 PY, 6 PZ, 6 QA, 6 QB, 6 QC, 6 QD, 6 QE, 6 QF, 6 QG, 6 QH, 6 QI, 6 QJ, 6 QK, 6 QL, 6 QM, 6 QN, 6 QO, 6 QP, 6 QQ, 6 QR, 6 QS, 6 QT, 6 QU, 6 QV, 6 QW, 6 QX, 6 QY, 6 QZ, 6 RA, 6 RB, 6 RC, 6 RD, 6 RE, 6 RF, 6 RG, 6 RH, 6 RI, 6 RJ, 6 RK, 6 RL, 6 RM, 6 RN, 6 RO, 6 RP, 6 RQ, 6 RR, 6 RS, 6 RT, 6 RU, 6 RV, 6 RW, 6 RX, 6 RY, 6 RZ, 6 SA, 6 SB, 6 SC, 6 SD, 6 SE, 6 SF, 6 SG, 6 SH, 6 SI, 6 SJ, 6 SK, 6 SL, 6 SM, 6 SN, 6 SO, 6 SP, 6 SQ, 6 SR, 6 SS, 6 ST, 6 SU, 6 SV, 6 SW, 6 SX, 6 SY, 6 SZ, 6 TA, 6 TB, 6 TC, 6 TD, 6 TE, 6 TF, 6 TG, 6 TH, 6 TI, 6 TJ, 6 TK, 6 TL, 6 TM, 6 TN, 6 TO, 6 TP, 6 TQ, 6 TR, 6 TS, 6 TT, 6 TU, 6 TV, 6 TW, 6 TX, 6 TY, 6 TZ, 6 UA, 6 UB, 6 UC, 6 UD, 6 UE, 6 UF, 6 UG, 6 UH, 6 UI, 6 UJ, 6 UK, 6 UL, 6 UM, 6 UN, 6 UO, 6 UP, 6 UQ, 6 UR, 6 US, 6 UT, 6 UY, 6 UZ, 6 VA, 6 VB, 6 VC, 6 VD, 6 VE, 6 VF, 6 VG, 6 VH, 6 VI, 6 VJ, 6 VK









